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THE DEVELOPMENT OF PROFESSIONAL PERSONNEL IN EDUCATIONAL RESEARCH, VOLUMES I AND II.

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THIS STUDY WAS UNDERTAKEN TO IDENTIFY OPPORTUNITIES THAT MAY EXIST FOR RESEARCH PREPARATION IN GRADUATE INSTITUTIONS, TO EXAMINE THE INSTITUTIONAL AND TRAINING ARRANGEMENTS THAT MAY BE RELATED TO OUTPUT OF RESEARCHERS, AND TO INVESTIGATE THE POTENTIAL COMMITMENT OF RECENT DOCTORAL RECIPIENTS TO EDUCATIONAL RESEARCH. DATA FOR THE STUDY CAME FROM TWO MAJOR SOURCES--(1) DATA COLLECTED BY THE WRITER, INCLUDING CONTENT ANALYSIS OF THE CATALOGUES OF 110 GRADUATE INSTITUTIONS, CASE STUDIES OF SELECTED RESEARCH ORGANIZATIONS, AND INTERVIEWS WITH 20 INDIVIDUALS, AND (2) DATA ALREADY EXISTING, INCLUDING INSTITUTION SURVEYS, QUESTIONNAIRE SURVEYS OF BEHAVIORAL SCIENTISTS, AND QUESTIONNAIRE SURVEYS OF THE 1964 DOCTORAL RECIPIENTS IN EDUCATION. CONCLUSIONS OF THE STUDY INCLUDE--(1) PRODUCTION OF RESEARCHERS IS HIGH WHEN THE INSTITUTIONS HAVE RELEVANT ORGANIZATIONAL CHARACTERISTICS, WHEN THE ORGANIZATIONS HAVE A SYSTEMATIC APPRENTICESHIP PROGRAM, AND WHEN RESEARCH ORGANIZATIONS PROVIDE A HIGH INDEX OF SCHOOL SERVICES, (2) THERE IS A NEED FOR RESEARCH ORGANIZATIONS TO DEVELOP THEIR OWN ARRANGEMENTS FOR RESEARCH ACTIVITY AND TRAINING, (3) INDIVIDUALS WHO SPEND AT LEAST SIX YEARS IN TEACHING ARE NOT POTENTIAL RESEARCH RECRUITS, (4) DOCTORAL RECIPIENTS TEND TO UNDERTAKE RESEARCH ACTIVITIES DURING THE FIRST YEAR FOLLOWING DEGREE RECEIPT, (5) THERE IS A NEED FOR IMPROVED RECRUITMENT PROCEDURES, AND (6) EDUCATION RESEARCH IS, IN FACT, AN ACADEMIC PURSUIT. (HW)

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THE DEVELOPMENT OF PROFESSIONAL PERSONNEL IN EDUCATIONAL RESEARCH: SUMMARY

(per PP, treat this summary as an abstract)

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under the sponsorship of

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Teachers College

Columbia University

and

the co-sponsorship of

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BACKGROUND

Many authorities in the field of education and the behavioral sciences feel that the preparation of researchers by the graduate institutions of education is lagging behind the training of individuals for the positions of teachers and administrators. It has been suggested that the efforts to develop researchers among the graduate students are restricted, if graduate students are predominantly oriented by prior commitments to future administrative and teaching positions and if the institutional goal of preparation for research is not emphasized. Since differences of academic program and requirements exist between the two types of doctorate in education, some differences may occur between not only the types of students who register for one degree over the other but also the types of research experiences received during the doctoral program and any subsequent outcomes for commitment to research. Furthermore, it seems that some fields of education, such as school administration, guidance and counseling, and secondary and elementary education, are more popular than others. If students in education do not see research in education as an academic pursuit, then the career decisions for research are rather tenuous. As evidenced in national educational research symposiums and publications, many definitions for "educational research" exist and have created disagreements among the faculty of the departments of education and of the behavioral science departments in the university. Such dissensions have given rise to such debatable issues as who should perform what kind of research in education and what proportion of the institutional resources should be devoted to research. It has been suggested that these conflicts may affect institutional structures for research within the graduate institution of education and the research experiences provided by these structures. Systematic study of one type of organizational structure, a research organization, seems necessary because some sociologists have claimed research bureaus offer the best opportunities for training, but that in education these organizations have been less effective in providing research experiences for their graduate students. Thus, it may be assumed that a student body that does not perceive research in education as a career and a graduate institution of education that does not emphasize graduate preparation for research may affect the existence, the sustainment, and, perhaps, the quality of any features or structures for training in research.

OBJECTIVES

1. Identification of conditions and structural characteristics of the graduate institution of education and of any sub-units of the parent organization that may relate to production of researchers by each of the two institutional settings.

   Organizational characteristics examined:

   1.1 Inputs, such as the kind of personnel recruited for research and the economic resources available for research activity and training;

   1.2 Outputs, such as the production rate of doctoral recipients by a graduate institution of education and school services provided by the research organization;

   1.3 Environment, such as the legal control of the university and research arrangements between the graduate institution of education (or the research organization) and academic departments or professional schools within the university;

1.4 Social structure, such as the size of the graduate institution of education, the level of admission to the graduate program, and size of the faculty in education doing research;

1.5 Attitudes, such as the primary responsibility of the graduate faculty in education, type of preparation receiving the greatest emphasis in the graduate institution of education, and some general educational opinions and problems facing educational research; and

1.6 Activities, such as the academic program for research courses offered by the graduate institution of education, activities permitting students to obtain research experiences, and range of research topics on which research is being conducted by each institutional setting.

2. Identification of individual characteristics that may relate to patterns for potential commitment to research by recent doctoral recipients in education.

Individual characteristics examined:

2.1 Personal characteristics, such as age at the completion of doctoral program;

2.2 Academic patterns, such as characteristics of the graduate institutions from which the doctorate was received, time-[illegible] patterns evidenced for obtaining the doctorate, and academic programs undertaken;

2.3 Patterns of economic resources, such as the receipt of a research scholarship or assistantship; and

2.4 Values and processes of decision making for activity in research prior to the receipt of the doctorate, such as the primary objective upon first entering graduate school and the range of opportunities to obtain research experiences.

PROCEDURES

Two major sources for data exist; data which the writer collected and data which were already existing and analyzed for the purposes of this study.

1. Data collected by the writer represent three parts: (a) Content analysis of the 1963-1965 catalogues of 110 graduate institutions of education that administer the doctoral degree. Analyzed were the name, the hour-credit and the number of research courses, the number and type of research entrance requirements to research courses, and the name and number of departments offering research courses. Also, collected were additional data concerning the type of doctorate in education administered, jurisdiction of the doctoral program, and important time-periods of graduate instruction in the university. (b) Some case studies of a few selected research organizations were performed through analyses of data, such as returned questionnaires of the institutional survey of directors of organizations, research reports and histories of the organizations. (c) Interviews were conducted with twenty individuals: professors who taught research courses in graduate institutions of education and in behavioral science departments outside the department of education; recent doctoral recipients in education; and doctoral students in the departments of education and sociology.

2. Data already existing and analyzed for the purposes of this study represent three parts: (a) Institutional surveys of deans, research coordinators, and directors of research organizations in graduate institutions of education adminstering the doctorate in education in 1963-64;

data were collected by Lazarsfeld and Sieber as part of Cooperative Research Project No. 1974. Sixty-six percent of the questionnaires sent deans and research coordinators of 107 graduate institutions represented returned useable institutional data. Questions inserted by the writer covered the size of doctoral and graduate programs and activities for training in research. Sixty-four of the 134 questionnaires sent directors represented returned useable organizational data. Questions inserted by the writer covered the training of doctoral students in the organization. (b) Questionnaire survey of behavioral scientists in departments of 77 of the 107 universities represented in the above project; data were collected by Brown as part of Cooperative Research Project No. S-087. Forty-three percent of the 367 psychologists and 52 percent of the sociologists who were sent questionnaires represented returned useable data. Questions inserted by the writer covered the contacts respondents had with graduate students in education whom they taught and their assessments of the academic performance of these students. (c) Questionnaire survey of the 1964 doctoral recipients in education; data were collected by Buswell, McConnell, et al. as part of Cooperative Research Project No. 51074. Eighty percent of the 2189 individuals who were sent questionnaires represented returned useable data. The writer added to the data cards certain organizational characteristics of the graduate institutions from which the doctorate was earned.

According to a 48 x 48 matrix of institutional variables, production of researchers by graduate institutions of education has been analyzed by the test statistic, H. Production has been operationally defined as the number of 1964 doctoral recipients who, upon the receipt of the degree, entered their first positions where 50 to 100 percent of their professional time was devoted to research.

According to a 48 x 48 matrix of organizational characteristics, production of researchers by research organizations has been analyzed by the test statistic, H. Production has been operationally defined as the proportion of doctoral recipients over the past three years who had worked in the organization and upon the receipt of the degree entered their first positions as full-time researchers.

According to 17 variables for the doctoral recipients, patterns for potential commitment to research by recent doctoral recipients have been analyzed by the test statistic, Chi-Square. Also, according to each of the 17 variables and the type of doctorate in education received, patterns have been examined. Potential commitment to research has been operationally defined by four types of research activity undertaken during the first year following the receipt of the doctorate; namely, publication of a research study closely related to the topic of the dissertation, participation in research projects, proportion of professional time spent in research, and preference for work in doing research.

Additional information for procedures may be found in Appendices A-G (volume two of the report).

RESULTS

1. Production of researchers by graduate institutions of education. Significance occurs under 170 sets of conditions. A set means one variable appears with another to yield significance. Forty-seven percent of the conditions are provided by 35 variables whose frequencies for yielding significant sets range from one to four. Fifty-three percent of the sets are provided by eight variables whose frequencies range from five to twenty-two.

A list follows of the three variables that yielded the most sets of conditions. In parentheses are their frequency of occurrence; also, given are a few examples of variables with which each appears:

1.1 An index of research quality (22), operationally defined as the graduate institutions of education mentioned or not mentioned by deans and research coordinators as doing the most competent and worthwhile research: proportion of interdisciplinarily trained faculty; level of admission to the graduate program; type of graduate preparation emphasized; research as the primary task of the graduate faculty; formal entrance requirements for admission; and type of doctorate in education administered.

1.2 A scale of university quality (Keniston's scale) (17): proportion of funds representing governmental sources financing research projects . . . outside any research organizations; existence of research organizations; proportion of doctoral students working on the Ph.D.; provision of a program for training in research; and range of research topics on which research is being conducted outside any research organization.

1.3 Level of admission to the graduate program in education (14), operationally defined as the proportion of applicants accepted to the graduate program: size of the social unit; proportion of faculty doing research; research as the primary responsibility of the graduate faculty; type of graduate preparation emphasized; type of doctorate in education administered; and range of research topics on which research is being conducted. . . .

Since almost two-thirds of the doctoral recipients who met the criterion for the operational definition for production of researchers came from the graduate institutions noted as doing the best research, certain characteristics that are present in over the majority of these schools are listed: affiliation with the high quality universities; a large doctoral program; a small social unit within the total university; a high proportion of interdisciplinarily trained faculty; a closed level of admission to the graduate program; no formal entrance requirements for admission; a high proportion of doctoral students working on the Ph.D.; graduate preparation for research emphasized; a high proportion of research courses with entrance requirements; a high level of apprenticeships on projects being conducted outside a research organization; a high proportion of the graduate faculty doing research; and provision of a program for training in research.

2. Production of researchers by research organizations. Significance occurs under 72 sets of conditions. Sixty percent of the sets are provided by 27 variables whose frequencies of appearing with other variables range from one to three. Forty percent are provided by three variables whose frequencies range from seven to thirteen. A list follows of the three variables that yielded the most sets of conditions. In parentheses are their frequency of occurrence; also, given are a few examples of variables with which each appears:

2.1 Doctoral students not in education working in the organization (13): doctoral recipients remaining in the organizations where they received their training; proportion of funds from governmental sources financing research projects; funds earmarked for training or academic programs provided by the organization; type of graduate preparation emphasized by the parent organization; research as the primary responsibility of the graduate faculty; affiliation with a department or special program within the graduate institution; period of time in which research was the primary activity of the director; type of research projects being performed in the organization; and provision of a systematic apprenticeship program.

2.2 Affiliation with parent organizations mentioned or not mentioned as doing the best research (9): doctoral students not in education working in the organization; level of facilitating the research of non-staff members; proportion of faculty in the organization whose teaching load is reduced according to a full-time equivalent; proportion of projects that have doctoral students working with them; period of time in which research was the primary activity of the director; provision of a systematic apprenticeship program.

2.3 Provision of a systematic apprenticeship program (7): doctoral recipients remaining in the organizations where they received their training; proportion of funds from governmental sources financing research projects; proportion of doctoral students working for the Ph.D. in the graduate institution; an index of interdisciplinary relations between the organization and academic departments or other professional schools; and the range of research topics on which research is being conducted.

Since provision of a systematic apprenticeship program is important for the production of researchers, characteristics yielding the highest mean productions by organizations with training programs and each of the following characteristics are noted: doctoral students not in education working in the organization; doctoral recipients remaining in organizations where they received their training; high proportion of funds from governmental sources; low index of interdisciplinary relations; affiliation with parent organizations noted as doing the best research; low proportion of doctoral students working on the Ph.D.; and a small range of research topics on which research is being conducted.

3. Patterns for potential commitment to research by recent doctoral recipients. For the summary, attention is given to the pattern of the proportion of professional time spent in research. However, a few statements concerning the remaining three patterns are made.

3.1 Significance occurs for preference for work in doing research now according to six characteristics: age at the completion of the doctoral program; major subject of the Bachelor's degree; longest period of continuous full-time residence; teaching or other school experience prior to the receipt of the degree; receipt of a research scholarship or assistantship; and range of opportunities to obtain research experiences. Individuals who have characteristics unfavorable for development of researchers tend to prefer working slightly more by themselves and slightly less with one or more assistants or jointly with an associate or as a leader of a team.

3.2 According to the type of degree earned and fifteen characteristics, significance occurs for the pattern of participation in research projects. Except for two conditions, doctoral recipients of the Ph.D. with favorable characteristics for research development rank first. The two exceptions occur with those awarded the Ed.D. who had the favorable characteristics: participation in research projects outside the school of education and at least two types of opportunities to obtain research experiences.

3.3 According to the type of degree earned and thirteen of the characteristics, significance occurs for the pattern of publication of a research study closely related to the topic of the dissertation. Except for four conditions, doctoral recipients of the Ph.D. with favorable characteristics for research development rank first. The four exceptions occur with those awarded the Ed.D. who had the favorable characteristics: psychology as the major subject of the Bachelor's degree; upon first entering graduate school the original objective of a doctoral degree in another department but later a change to one in education; research opportunities considered of highest importance in the selection of the graduate institution from which the doctorate was received; and at least two types of opportunities to obtain research experiences.

3.4 Doctoral recipients who tend slightly less to spend no professional time in research and slightly more to record a high proportion of professional time in research have the following characteristics:

(1) Earned the Ph.D. in education

(2) Completed the doctoral program at 32 or younger

(3) Attended graduate institutions of education from which the doctoral degree was received that had the following organizational characteristics: a closed level of admission to the graduate program; research (alone plus others) as the type of graduate preparation emphasized; professional experience as a formal entrance requirement for admission; a program for training in research as a part of the regular degree program; and a high proportion of the graduate

faculty doing research

(4) Had psychology or education as the major subject for the undergraduate degree

(5) Had taken three or at least four courses in college mathematics

(6) Stated that they learned methods used now in doing research mainly in courses taught outside the department of education

(7) Had at least 18 months of continuous full-time residence as a graduate student in the institution from which the doctorate was received

(8) Had spent prior to the receipt of the doctoral degree no years or one to five years in teaching or other school experience

(9) Had received a research scholarship or assistantship

(10) Upon first entering graduate school had the original objective of a doctoral degree in another department but later changed to one in education

(11) Considered of highest importance in their selection of the graduate institution from which the doctorate was received the research opportunities provided by the school

(12) Participated in research projects in a department outside the graduate institution of education

(13) Had had more than one type of opportunity to obtain research experiences prior to the receipt of the doctorate: (category represents a combination of at least two of the three exclusive types of opportunities: (a) exclusively a research assistant in a research organization; (b) exclusively a research assistant to a professor; and (b) exclusively a research experience termed "other".)

According to the type of degree earned and twelve characteristics, significance occurs for this pattern. Doctoral recipients of the Ph.D. with the favorable value of each characteristic rank first on a high proportion of professional time spent in research. For four of these values, difference on the high category is no more than five percent between the two types of doctoral recipients: (1) attended graduate institutions emphasizing preparation for research; (2) upon first entering graduate school had the original objective of a doctoral degree in another department but later changed to one in education; (3) research opportunities were considered of highest importance in the selection of the graduate institution from which the doctorate was received; and (4) participated in research projects in a department outside the school of education.

CONCLUSIONS AND IMPLICATIONS

1. Production of researchers by graduate institutions of education is high when the institutions have a cluster of organizational characteristics important for arrangements for research activity and training. Such characteristics include, among others, a closed level of admission to the graduate program, a high proportion of the graduate faculty doing research, graduate preparation for research emphasized, a high level of apprenticeship on projects, and a program for training in research.

2. Production of researchers by research organizations is very high when the organizations have a systematic apprenticeship program and a high proportion of economic resources for research activity. Evidence further indicates that organizations with no training program have a relatively greater likelihood of yielding a high institutional output of researchers, if they have a high proportion of economic resources for research activity.

3. Research organizations that provide a high index of school services may also yield a high production of researchers, if arrangements for research activity and training are relatively insured. Research organizations that have a low provision of school services may not necessarily yield a high production of researchers, if there does not exist a sufficient number of characteristics important for arrangements for research activity and training.

4. Results for production of researchers have shown the relevancy of having in the organization a sufficient number of characteristics favorable for research activity and training. However, the question of the volume of research activity and student participation in a given institutional setting is germane. Analysis of data imply that a large volume of activity may create difficulties for the organization to individualize and integrate sufficiently the research experiences provided by the organization -- experiences that culminate in career decisions for full-time research by the doctoral students.

5. Research organizations may have arrangements for research activity and training that complement existing characteristics favorable for production of researchers by the parent organization. Or they may have goals and activities for research not necessarily found in the parent organization. Analyses of data imply the potential need for research organizations to develop -- rather autonomously in some cases from the parent organization -- their own arrangements for research activity and training that are important for their own institutional output of researchers.

6. The following characteristics may be considered relatively important for future models for research training: students who will be 32 or younger

at the completion of the requirements for the doctoral program; the availability of funds for research scholarships or assistantships; involvement in interdisciplinary research through participation in interdepartmental research projects outside the graduate institution of education; the provision of at least two types of opportunities to obtain research experiences (a combination of at least two of the following types: (1) research assistant to a professor; (2) research assistant in a research organization; and (3) a general type of research experience termed "other"); the experience of publishing research reports; and the requirement that doctoral students have (at least) three years of continuous full-time residence in the graduate institution.

7. Evidence shows that individuals who spent at least six years in teaching or other school experience are not potential recruits for research. However, recruitment procedures for potential trainees in research should not exclude consideration of individuals who have spent between one and five years in this activity because they have relatively greater likelihood of entering research than do those who have six years or more in teaching or other school experience.

8. Evidence shows for most of the favorable characteristics for research development that doctoral recipients awarded the Ph.D. tend slightly more to undertake research activities during the first year following the receipt of the doctorate. However, for a few of the favorable characteristics there occurs on the patterns for research activity the first rank order by those awarded the Ed.D. or almost negligible differentiation between the two types of doctoral recipients. In light of these findings, the development of professional personnel in research should perhaps have less

concentration on the differentiation between the two types of doctoral degrees administered in education and more concentration on the differentiation of the types of models for research training.

9. Evidence shows that only a relatively few of the 1964 doctoral recipients had considered of highest importance in their selection of the graduate institution the research opportunities provided by that institution from which the doctorate was received. Therefore, there is a need for recruitment procedures to stress the relative importance of a career in educational research -- to indicate that educational research is an academic pursuit. Furthermore, there is a need for recruitment procedures to increase on the part of the future graduate student in education the awareness of the research opportunities provided by the graduate institution of education and the university.

10. If educational research is, in fact, an academic pursuit, it seems relevant that the concern for the development of professional personnel in educational research belongs to the academic community as a whole -- not exclusively to the graduate institutions of education or a few graduate departments with related research interests that are outside the graduate institution of education. The concern of the academic community is to recruit potential trainees in research and to provide the optimum opportunities for students to obtain research experiences.

BIBLIOGRAPHY

There are 154 references listed in the final report.

PUBLICATIONS

Sieber, Sam D., Nancy H. Millikan and David Wilder. "Project Memorandum No. 3: Course Offerings in Educational Research - An Examination of Catalogues of Schools of Education and of the Training of Doctoral Recipients", The Organization of Educational Research by Paul F. Lazarsfeld and Sam D. Sieber. New York: Bureau of Applied Social Research, Columbia University. October, 1964. (Mimeographed)

Sieber, Sam D. and Nancy H. Millikan. "Some Statistics on Research Training in Graduate Schools of Education: Prepared for the Office of Education", The Organization of Educational Research by Paul F. Lazarsfeld and Sam D. Sieber. New York: Bureau of Applied Social Research. May 4, 1965. (Mimeographed)

Sieber, Sam D. and Nancy H. Millikan. "Project Memorandum No. 8: The Training for Careers in Educational Research: A Study of Institutional Inputs", The Organization of Educational Research by Paul F. Lazarsfeld and Sam D. Sieber. New York: Bureau of Applied Social Research, Columbia University. January, 1966. (Mimeographed)

Millikan, Nancy H. "Production of Researchers by Graduate Schools of Education", The Development of Professional Personnel in Educational Research. New York: Teachers College, Columbia University and Bureau of Applied Social Research, Columbia University. September, 1966. (Mimeographed)

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THE DEVELOPMENT OF PROFESSIONAL PERSONNEL IN EDUCATIONAL RESEARCH

Cooperative Research
Project No. S-487-64

Nancy H. Millikan

under the sponsorship of

Professor Sloan Wayland

Teachers College

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CHAPTER I

INTRODUCTION

Even a brief perusal of the present literature on the state of affairs of educational research gives evidence of the concern that many educational and behavioral science leaders in the universities, the professional organizations such as the American Educational Research Association, and the United States Office of Education have concerning the scarcity of qualified researchers in education and the training opportunities afforded for the research trainee particularly by the graduate institutions of education. Although the literature points to the need for improved preparation of research personnel by the departments of education, until just recently there seems to be little systematic evidence on the present situation and subsequent outcomes. Some of the recent studies on the state of affairs of educational research indicate that some of the problems reside in the organizational structure of the graduate institution of education, in the intellectual and research climate, the graduate program and the characteristics of the students and the faculty (23,80, 90, 119).[1]

Some statistics quoted from some recent studies provide the reader with some insight into the gravity of the problem; for example, in a study of proposals submitted to the Cooperative Research Program, U.S.O.E. in 1956-63, "the number of proposals originating in schools or departments of education remained fairly constant, despite the substantial increase in funds appropriated to the Cooperative Research Program.

Proposals from departments outside the schools of education . . . increased four-fold over the same period. . . . About half of the projects funded by the CRP in 1962 originated in departments of education; today the proportion is closer to 30 percent" (121). According to Bargar's study conducted at the Ohio State University, about 3.1 percent of the individuals who have conducted research on the concerns of professional education were devoting full-time to research. And half of those included in the study were devoting 20 percent or less of their professional time to research (8, p. 34). These figures strongly imply a systematic examination of the existing situation of educational research in the graduate institutions of education that has yielded these reported findings.

To interpret these findings as an indicator that only now individuals and graduate institutions of education have become really concerned about the state of affairs would be very misleading. The preparation of educational researchers has been discussed for a number of years. Perhaps the criticisms and the focus of the issues have become more sharply defined now for several reasons. Some rationale may be: (1) the increased commitments of the Office of Education to research and development;[2] (2) the newly increased organizational positions and units within the graduate institution of education that devote time and money to research efforts;[3] and the increased scrutiny by professions and academic disciplines concerning the types of training their students receive and the competencies and inadequacies of such preparation.[4] One general conclusion drawn from the increased activities is that, over a relatively short time-period, the intensity and frequency of events have elicted many conditions that need systematic examination of the uses of human and monetary resources connected with the venture of educational research.

The present study was undertaken to identify opportunities that may exist for research preparation in graduate institutions of education, to examine the institutional and training arrangements that may be related to output of researchers, and to investigate recent doctoral recipients concerning their potential commitment to educational research and any personal or sociological characteristics that may give evidence for this commitment.

The report is organized into seven chapters, covering the design of the study and the findings to date. The analysis of data is still in progress and additional findings are to be reported in the forthcoming dissertation based on these materials.[5]

The chapter on the design and the execution of the study presents the problem on which the result is based, the related literature, the objectives and hypotheses of the study, and the procedures and techniques employed. (Additional details about the procedures are presented in the appendices.)

Chapters three through six present the findings to date. Chapters three and four cover the institutional setting, the graduate institutions of education. Chapter five relates the organizational characteristics of research organizations affiliated with these graduate institutions. Chapter six examines potential commitment to reseearch by recent doctoral recipients in education according to some individual characteristics.

Finally, chapter seven presents conclusions and some implications of the findings, including suggestions for improving the preparation of researchers in education.

Footnotes for Chapter I

1. The number(s) located within the parentheses after statements or quotes incorporated within this report refer to the source of reference(s) found in the bibliography.

2. In The American Educational Research Association Newsletter, Vol. XVI, No. 4 (October, 1965), p. 4, the Office of Education has said that one way of attracting competent individuals to the regional laboratories is to offer salaries in the range of $30,000-$40,000. Another innovation by the Office of Education is the availability of $8 million for the support of training programs in universities, state departments and other agencies engaged in educational research for the first year of the program.

3. In the final report, The Organization of Educational Research, Cooperative Research Project No. 1974, by Sam D. Sieber and Paul F. Lazarsfeld, Sieber points out that "only 30 percent of the schools have neither coordinators, committees, nor research units. . . . In short, the great majority of schools of education contain some arrangement for facilitating or conducting research" (119, p. 33).

   Interestingly enough, of the 64 research bureaus representing the acceptable returned forms of the 1965 institutional survey of directors of research organizations, 50 percent of the organizations were founded between 1910 and 1954 and 50 percent, between 1955 and 1962. The acceleration of this one administrative arrangement implies some dynamic change of the interpretation of the role of research within the social unit, the school of education, and perhaps necessitates the urgency of studying these units and their activities.

4. Within the past decade studies have been conducted in the context within which psychological and sociological inquiry can identify the extent to which socialization of the "novice" to a profession or an academic discipline does come about and the ways in which it comes about. Such studies include among others:

   (1) Doctoral Graduates in Education: An Inquiry Into Their Motives, Aspirations, and Perceptions of the Program" by Laurence D. Brown (18);

   (2) Training for Educational Research, Cooperative Research Project No. 51074, by Guy T. Buswell, T. R. McConnell, et al. (23);

   (3) "Processes of Socialization in the American Graduate School" by David Gottlieb (53);

(4) Who Chooses Social Work, When, and Why? An Exploratory Study of Factors Influencing Career Choices in Social Work by Arnulf M. Pins (102);

(5) The Student-Physician: Introductory Studies in the Sociology of Medical Education edited by Robert K. Merton, et al., (89); and

(6) "The Reading Experts: A Case Study of the Failure to Institutionalize an Applied Science of Education" by David Wilder (149).

Self-exploration of at least two behavioral science fields has been done:

(1) America's Psychologists: A Survey of a Growing Profession by Kenneth E. Clarke (30), and

(2) The Education of Sociologists in the United States by Elbridge Sibley (118).

One may draw at least two general conclusions from the above mentioned studies. First, the field of education with special emphasis on the training of its research personnel is ready to undertake self-examination as well as study by its colleagues from related disciplines such as sociology. Secondly, one is aware of the wealth of knowledge and scientific technique that are available for potentially competent analysis of the environmental conditions affecting the training of educational researchers and their productivity.

5. It is generally accepted that "education has established its position in the university structure as a profession, as a field of systematic study, and as a subject for scientific investigation." (T. R. McConnell, "Organization Within the University of Graduate Work in Education," The Fiftieth Yearbook of the National Society for the Study of Education, Part I: Graduate Study in Education (86, p. 29).

However, there are indications based (1) on the qualitative interviews of this project, (2) on the data collected for the study, and even (3) on some of the recommendations resulting from the recent studies on educational research that graduate institutions of education are still in the process of clarifying their position in the research community of the university. Some additional findings to be reported in the forthcoming dissertation will explore this concept of membership in the research community and the empirical implications to the professional development of researchers in education.

CHAPTER II

DESIGN AND EXECUTION OF THE STUDY

A. The Problem and Its Background

As stated in the Introduction, many authorities in the field of education and the behavioral sciences feel that the preparation of research personnel by the graduate institutions of education is lagging behind the training of individuals in the other educational preparations of teaching and administration. Although the observations pointed to the need for improved preparation of research personnel by the schools of education, until just recently there had been little systematic evidence on the present situation and subsequent outcomes.

In the proposal for the project, it was suggested that the efforts to develop researchers among graduate students are restricted, if graduate students of education predominantly are oriented by prior commitments to future administrative and teaching positions. Similarly, it appeared that those students who are research-inclined might be hindered in preparing competently for research in education in several ways. One such hindrance is the stated type of preparation which receives the greatest emphasis in graduate schools or departments of education: the preparation for teaching and administration either in public schools or colleges.

Also, it appeared that the academic program and requirements of the schools of education seemed to reflect not only differences between the two degrees, the Ed.D. and the Ph.D. in education, but also some areas for conflicting opinions among the educators. For example, although a high proportion of the graduate institutions require educational measurements and research as a common core of courses for all areas of major concentration, some educational leaders strongly question such a proportion of emphasis (153, p. 43). Similarly, if differences of academic program and requirements existed between the two types of degree in education, some differences between the types of students who registered for one degree over the other and between the types of training in research received during their doctoral program might be discernible. And such differences may in turn affect future research commitment by doctoral recipients in education.

Another area of the problem focused on the many definitions of educational research that created disagreements between the educational leaders, the faculty of the graduate institutions of education, and the behavioral scientists outside the schools or departments of education. Furthermore, such dissensions expressed in national educational research symposiums and in publications, gave rise to such debatable issues as, who should perform what kind of research in education and what proportion of the institutional resources, human and monetary, should be devoted to research? These conflicts, it was assumed, affected organizational structures for research within the school of education as well as the types of experiences and training in research available for the graduate students. One type of organizational structure for research within schools of education, a sub-unit called a research organization, seemed necessary to study. Examination of this social structure seemed germane because some sociologists claimed that research bureaus offer the best opportunities for training, but that in education these research organizations have been less effective in providing research experiences for their graduate students (80). Thus, salient questions for systematic study seemed to be among others: (1) what kinds of research climate existed in these organizations, (2) what kinds of opportunities for experiences in research were made available to graduate students, and (3) what were some outcomes of having had experiences in the research organization?

Finally, it seemed that some fields of education, such as school administration, guidance and counseling, educational psychology, secondary and elementary education, are more popular than others (96, Table 55, p. 68). Furthermore, there seemed a lack of systematic knowledge on the effects the different kinds of training and experiences in research during the graduate program had concerning the doctoral recipients' career choice, with special emphasis on potential research commitment. If students in education do not see research in education as an academic pursuit in its own right, then the career decisions for research are rather tenuous. Likewise, it might be assumed that a student body that did not perceive research in education as a career and that a graduate institution of education that did not emphasize preparation in research as an institutional requirement or goal might affect the existence of, the sustainment of, and, perhaps, the quality of any features or structures for training in research.

Thus, the crucial topic of the project is concerned not only with the identification of conditions and structural characteristics within the organization and any sub-units of the organization that provide experiences and training in research for the graduate student but also with the identification of any patterned commitments to research on the part of the doctoral recipient. And it is hoped that this study has produced data upon which evaluative statements about the development of professional personnel in educational research can be made as well as upon which further research on the topic is stimulated.

B. Objectives and Hypotheses

From the preceding deliberations, two specific objectives for the study are: (1) to identify organizational structures and features for training in research as related to the development of professional personnel in research by graduate institutions of education and subunits of the parent organization, and (2) to investigate potential commitment to research by recent doctoral recipients in education. When concerned with the data from graduate institutions and research organizations affiliated with the institutions, the major dependent variable is the production of researchers by these two types of organizations and the independent variables are the organizational structures, policies and mechanisms for training in research. When concerned with the data from recent doctoral recipients, the major dependent variable is potential commitment to research by the doctoral recipient in education and the independent variables are their personal characteristics, their academic patterns, their patterns for economic resources, and their attitudes and processes of decision making for activity in research.

The remainder of this section outlines more specifically the variables and hypotheses according to the two objectives.

I. Objective: To identify organizational structures and features for training in research as related to the development of professional personnel in research by graduate institutions of education and by their sub-units affiliated with the graduate institutions.

As stated above, the primary dependent variable is the production of researchers by these two organizational settings. Production by graduate institutions is defined as the number of 1964 doctoral recipients who upon the receipt of the degree entered positions where 50 to 100 percent of their professional time is devoted to research.[1]

The major independent variables for the data on graduate institutions of education are classified according to three external and three internal characteristics of the organization: inputs, outputs, and environment; social structure, attitudes, and activities. The key question is how is production of researchers affected according to these organizational variables?

The six categories of variables and their sub-categories are:

1. Inputs: For example, the kind of personnel recruited and the economic resources available.

1.1 Proportion of the graduate faculty in education that received most of their training for their highest degree outside any graduate school of education;

1.2 Level of financial support for research projects conducted outside any research organization by the source, state and federal government;

1.3 Level of financial support for research projects conducted outside any research organizations by the school of education and the university.

2. Outputs: For example, services and consequences of organizational activity.

2.1 The production rate of a graduate institution of education;

3. Environment: For example, the characteristics of the university in which the organization belongs and its relations with the public or other organizations within the total system.

3.1 The type of legal control of the university to which the graduate institution belongs;

3.2 The quality of the university in which the graduate department or school of education is an organizational sub-unit;

3.3 An index of interdisciplinary relations;

3.4 A research index of interdisciplinary relations;

3.5 Departments outside the school or department of education that offer courses required by the graduate institution of education.

4. Social structure: For example, formal authority structure, division of labor and departmentalization, and size.

4.1 Jurisdiction over the doctoral program;

4.2 Level of admission to the graduate program: proportion of applicants to the graduate program that are accepted;

4.3 Proportion of the graduate faculty that supervise dissertations in areas of their own research interests;

4.4 Size of the graduate school or department of education;

4.5 Existence of a research organization affiliated with the graduate school or department of education;

4.6 Proportion of the graduate faculty of education who do research.

5. Attitudes: For example, organizational goals, perceptions of organizational characteristics, and evaluative statements with role or organizational accomplishments.

5.1 Primary responsibility of the graduate faculty in education;

5.2 Judgment by two administrative officers in the graduate institution of education as to the institutions of education that perform the most competent and worthwhile educational research;

5.3 Type of preparation which receives the greatest emphasis in the graduate school or department of education;

5.4 Preference for anticipated type of recruitment of personnel;

5.5 Some general educational opinions and problems facing educational research and the activities of the organization, as perceived by the dean.

6. Activities: For example, collective activities and administrative devices.

6.1 Academic program for research courses offered by the graduate institution of education;

6.2 Formal entrance requirements for admission to the graduate program;

6.3 Type of doctorate in education administered by the graduate institution of education;

6.4 Activities permitting graduate students in education to obtain skills, routines, and sensitivities of research;

6.41 Type of training programs offered for students desiring a career in educational research;

6.42 Type of organization setting for obtaining data for the dissertation;

6.43 Apprenticeships on projects being performed outside any research organization;

6.5 Range of research topics being studied outside any research organization.

(In Appendix C there is a listing of these institutional variables and the questionnaire item on which each is based.)

It is reasonable to expect systematic differences in the types of institutions that have different inputs and environmental characteristics. It is expected that graduate schools of education with emphases on research as the first responsibility of the graduate faculty of education and as the graduate preparation for their students will differ from their counterparts according to production of researchers. Also, it is expected that graduate schools with a high level of activities permitting their graduate students to obtain skills, routines and sensitivities in research tend to differ from their counterparts in production of researchers.

Thus, examining production of researchers by graduate institutions of education according to the six external and internal characteristics of the organization may yield insights into the phenomenon, development of professional personnel in educational research.

As stated previously, research organizations affiliated with graduate institutions represent sub-units of the parent organization. Similarly, production of researchers by these sub-units represents the major dependent variable in analyzing data of this organizational setting. Production is defined as the proportion of doctoral recipients over the past three years that had worked in the organization and who upon the receipt of the degree entered their first positions as full-time researchers.

As with the institutional data, the major independent variables for the data on the sub-units are classified according to three external characteristics of the organization and to three internal characteristics; namely: inputs, outputs, and environment for the former and social structure, attitudes, and activities for the latter characteristics. Again, the key question is how is production of researchers affected according to these variables?

The six categories of variables and their sub-categories are:

1. Inputs: For example, the kind of personnel recruited and the economic resources available.

1.1 Proportion of doctoral students in education that work with projects being performed in the organization;

1.2 An index of interdisciplinary students in the organization;

1.3 The remaining in the unit after graduation by doctoral recipients who worked there;

1.4 An index of interdisciplinary researchers in the unit;

1.5 Monetary emphasis of the research organization;

1.6 Level of financial support for research projects conducted in the unit by the source, state and federal government;

1.7 Level of financial support for research projects being performed in the unit by the school of education and the university;

1.8 Funds earmarked for training programs or academic courses in the organization.

2. Outputs: For example, services and consequences of organizational activity.

2.1 An index of school services performed by the research organization.

3. Environment: For example, the characteristics of the school of education in which the research organization belongs and its relations with the public or other organizations within the total system.

3.1 An index of interdisciplinary relations;

3.2 A research index of interdisciplinary relations;

3.3 Involvement of the graduate faculty in education with plans for new studies conducted in the organization;

3.4 Type of legal control of the university to which the research organization belongs;

3.5 Level of admission to the graduate program;

3.6 Formal entrance requirements for admission to the graduate program;

3.7 Type of doctorate in education administered by the graduate institution of education;

3.8 Academic program for research courses offered by the graduate institution of education to which the unit belongs;

3.9 Required courses in departments outside the school or department of education;

3.10 An index of interdisciplinarily trained faculty of the graduate school of education;

3.11 Type of preparation which receives the greatest emphasis in the graduate school or department of education;

3.12 A research index of interdisciplinary relations by the graduate institution of education;

3.13 The type of training program offered for students desiring a career in educational research by the institution to which the research unit belongs;

3.14 Level of faculty participation in research for the graduate institution;

3.15 Primary responsibility of the graduate faculty in education;

3.16 Standing of the graduate institution of education with respect to being mentioned or not mentioned as a graduate institution that is doing the most competent and worthwhile educational research in the United States.

4. Social structure: For example, formal authority structure, division of labor and departmentalization, and size.

4.1 Implied control on the research organization;

4.2 Proportion of faculty in the unit whose teaching load is reduced according to full-time equivalent;

4.3 Level of facilitating the research of faculty who are not members of the staff in the unit.

5. Attitudes: For example, organizational goals, perceptions of organizational characteristics, and evaluative statements with role or organizational accomplishments.

5.1 Some general educational opinions and problems facing educational research and the activities of the organization to which the unit belongs, as perceived by the director of the research organization.

6. Activities: For example, individual role behavior, collective activities and administrative devices.

6.1 Range of research topics being studied in the unit;

6.2 The nature of the research topics being undertaken in the organization;

6.3 Type of research projects being performed in the unit;

6.4 Proportion of projects being undertaken in the unit that have students with them;

6.5 Activities permitting doctoral students in the unit to obtain skills, routines, and sensitivities of research:

6.51 Type of training program in the organization;

6.52 Academic programs offered in the unit and academic credit given for the programs;

6.53 Use of the research organization by doctoral students in education to obtain data for the dissertation;

6.6 One of the director's responsibilities: to provide opportunities for students to participate in research;

6.7 Time-period in which research was primary activity by the director.

It is reasonable to expect systematic differences in research organizations that recruit different personnel and have different academic programs for their doctoral students and different financial support and emphasis for the projects being undertaken in their organization. It may be assumed that the value for a characteristic that yields favorable production by the parent organization may not necessarily remain the same value of the characteristic that provides favorable production by the research organization. Thus, research organizations may be established to be rather autonomous sub-units. Although it may be assumed that many characteristic considered important for research activity and training should be present in organizations, the "volume" of activity may be an important concern.

Again, examining production of researchers by research organizations according to these external and internal organizational characteristic may provide insights into the major topic of the study.

(In Appendix D there is a listing of these organizational variables and the questionnaire item on which each is based.)

The final part of the section on objectives and hypotheses deals with the examination of potential commitment to research by recent doctoral recipients in education.

II. Objective: To identify any potential patterned commitment to research on the part of recent doctoral recipients according to their personal characteristics, their academic patterns, their pattern of economic resources for their education, and their values and processes of decision making for activity in research.

Research commitment, the dependent variable, has been operationally defined by four items. They are:

(1) participation in any research projects during the first year following the receipt of the doctorate in education;

(2) proportion of professional time spent in research in the first position after the receipt of the doctorate;

(3) publication of a research study that is closely related to the subject of the dissertation; and

(4) in doing research now, the preference in work-patterns that are desired by the recent doctoral recipient.

Each of the above dependent variables is examined according to four major classes of independent variables and their sub-categories. They are:

1. Personal characteristics.
    1.1 Age of the doctoral recipient at the completion of the doctoral program.
2. Academic patterns.
    2.1 Characteristics of the graduate institution from which the individual received his degree;
    2.2 Major subject areas;
    2.3 Academic programs undertaken by the respondents;

2.4 Type of doctorate in education earned by the individual;

2.5 Time-patterns evidenced for obtaining the doctorate in education;

2.6 Evaluation of the academic program and experiences during the doctoral program.

3. Patterns of economic resources.

3.1 Teaching or other school experience prior to receiving the doctorate in education;

3.2 Receipt of a research scholarship or assistantship.

4. Values and processes of decision making.

4.1 Decision to study for the doctorate in education;

4.2 Primary objective upon entering graduate school;

4.3 Rationale for choosing the graduate institution of education which the individual attended: research opportunities;

4.4 Research experiences prior to receiving the doctorate in education.

In summary of the second objective for the study, it is reasonable to expect systematic differences in the types of recent doctoral recipients that select different institutions and have different academic patterns and different resource-patterns. It is expected that differentiation on patterns occurs according to the age that the individual completed the doctoral program. And systematic differences are expected according to the type and range of research experiences the doctoral recipient had prior to the receipt of the degree.

Hence, by obtaining a rather detailed and systematic quantitative and qualitative picture of the state of affairs, it may be possible to suggest means and procedures by which graduate institutions of education and their affiliated research organizations may better cultivate and utilize the human resources available for educational research.

These are the objectives of the project covered in the topics and the hypotheses chosen for inclusion in the procedures for data collection. The next section of this chapter covers the related research literature.

C. Related Literature.

Although the literature provides a foundation to develop ideas, until just recently the body of writings does not contain systematic studies of actual recruiting practices in the field of educational research or ways of identifying and developing personnel in educational research. However, it appears that there are three kinds of related literature. The first kind covers descriptive articles on the state of affairs and some proposed remedies for training researchers in certain fields of education. The second type of related literature discusses studies of other academic disciplines and professions. Thirdly, there is a review of studies that do touch directly upon the topic of the development of professional personnel in educational research. Each kind of related literature is discussed briefly. For the latter kind, however, a more detailed presentation of some salient findings of the studies is given.

The first type of related literature consists predominantly of impressionistic rather than systematic attempts to propose remedies for training researchers in education. Brim discusses in detail the difficulties of educational training and research for the sociologists in education (17). Buswell in a talk given at the annual convention of the AERA in 1962 stated "that educational research in this country might benefit greatly if a few, even one or two, universities would set a new pattern for research training in education. My belief is that we need a few graduate departments of education completely divorced from the professional and all the various demands that affiliation with it necessitates" (22, p. 6).

In this same vein of what education needs for developing research talent, Bereiter declares "that we must improve the field before we can hope to produce much improvement in the quality of the young people attracted to it and the quality of the training they receive. More specifically, I think that the most positive action we can take will be that which is arrived at improving research and training at the same time" (10, p. 95).

Another assessment of the state of affairs in educational research is succinctly stated by Douglas Scates in 1947: "At present the resources for our research are pitifully small and scattered. In point of bulk, much of our work is now being done by graduate students, and most of the rest is carried on by professors in their spare time as a matter of personal interest" (114, p. 365).

He further declared a need for funded research centers that would undertake "long-range problems which the individual research worker cannot or will not undertake" (114, p. 367). (In 1963 the Office of Education initiated such funding of research organizations, known as Research and Development Centers.)

There have been some proposed remedies for training researchers in educational psychology and administration (54, 123). There have been suggestions for an undergraduate curriculum in educational research (44). Although the first kind of related literature provides a valuable base upon which to build ideas, the findings of these commentaries also suggest the merit of a study that systematically examines research training of graduate students in the graduate departments of education.

The second type of related literature pertains to studies of other academic fields and professions with respect to training experiences and problems of their graduate students. Wright finds that the general orientations of the student significantly affect the learning of research methods and his occupational commitment in the field of sociology (150). Sibley, strongly expressing the need for methodically planned practical research experiences during the immediate stages of the graduate sociology student's education, reports some academic program areas that sociologists felt lacking in their research training (118). Selvin, discussing the state of affairs of teaching methodology in sociology, shows the need of increasing the mathematical knowledge of graduate students in order for them to become more competent in methodology courses and in research (115, p. 7).

Berelson found that doctoral recipients in education, compared with doctoral recipients in other disciplines, ranked very low with respect to the proportion who had published one or more titles (11, p. 55). Barton's and Wilder's study on reading experts replicates Berelson's observations that graduate schools of education lack a research environment and that graduate students do not receive training or financial support conducive to research activity. The authors, however, do indicate that a minority of reading experts who have had some form of direct research experiences, such as being connected with research bureaus, do act differently with respect to research. This minority, for example, more often apply for and receive research grants than do other experts without such research experiences. The crucial point is that these experiences and training patterns have not as yet been institutionalized by graduate schools of education (7).

In the study, America's Psychologists, Clark reports that the Significant Contributors to the field of psychology differ from the Psychologists-in-General. Some of the differences, among others, include the rationale on which selection was made of the first school at which graduate work was taken. "The Significant Contributors differ mainly in giving greater emphasis to the influence of the undergraduate adviser, and the laboratory and research facilities, and less emphasis to geographic factors" (30, p. 127). Whereby the Psychologists-in-General tend to be more frequently in clinical psychology and educational psychology, more of the Significant Contributors are in experimental psychology and in physiological psychology. The rank order of four activities based on the average percent of time spent in each activity by the Significant Contributors is research, teaching graduate students, administrative responsibilities, and teaching undergraduate students. For the Psychologists-in-General, however, their rank order of the same four activities is administrative responsibilities, teaching undergraduate students, research, and teaching graduate students. Furthermore, the time period of first thinking about psychology as a career differs for these two groups: "the undergraduate program in college does the most to stimulate interest in psychology, especially the last two years, and with particular effect on the Significant Contributors. . . . (T)here is evidence of an increase over the passage of time in the number of Significant Contributors who thought about psychology as a career in the first two years of college. No such trend exists for the control group" (30, p. 109). Finally, it is worth noting that the individuals who tend to continue directly into graduate work and to receive their doctorate as a part of a continuing program of training and education are in the general and experimental fields of psychology, areas that yield the Significant Contributors to psychology. The persons in applied areas such as educational psychology take jobs of one kind or another during the time that they are completing work for their degree and thus there is a prolonging of their doctoral work.

In a report of a seminar on the education for research in psychology, the participants concluded that apprenticeship is probably the most crucial part of education for research in psychology. Furthermore, the crux of education for research is a faculty which itself is actually doing research. "In the absence of such a faculty and hence in the absence of meaningful apprenticeships, preoccupation with the improvement of courses offered or of various formal requirements can do little to contribute to what is crucial in research training" (135, p. 176).

Studies of the professions of social work, college teaching, law, and medicine have shown differences with respect to (1) the types of influences affecting one's career decision, (2) the age of making such decisions, and (3) the educational experiences provided by the institutions (102; 60, 125, 140; 82, 136; 9, 69, 89).

Based on a sample of almost 3,000 graduate students in the arts and sciences divisions of 140 major private and public universities, Gottlieb studied how the professional self-image was developed. Using a "change-index," he demonstrates that the research-oriented departments will produce a change of career aspirations in the direction of research (53).

Rogers reports on a study that shows how a social research bureau acted as a socializing agency rather than just a training organization (108). Lazarsfeld describes the intellectual problems of the social research institutes: training, teaching, and services (81). Although descriptive, the analyses of training in routines, skills, and sensitivities provided a conceptual framework for studying the training dimensions of educational research organizations. Selvin discusses the role of research institutes, the values of research assistants, project activities and seminars, formal institute courses, and research facilities provided by the institutes (115, pp. 30-35). Once again the second kind of literature provides information for a conceptual framework for a study of the development of professional personnel in educational research. Also, there is evident a comparative examination between the data obtained from the present study and some of the findings reported in the above studies.

The third kind of related literature refers to recent studies which do touch directly upon the topic of this project. There are five studies to be considered in this classification: the AACTE studies of the recipients of the doctorate in education for the years, 1956-58; a an unpublished doctoral dissertation, "The Reading Experts: A Case Study of the Failure to Institutionalize an Applied Science of Education," by David Wilder; The Organization of Educational Research by Sam D. Sieber and Paul F. Lazarsfeld; Doctoral Graduates in Education: An Inquiry into Their Motives, Aspirations, and Perceptions of the Program by Laurence D. Brown; and Training for Educational Research by Guy T. Buswell, T. R. McConnell, et al. The findings of the latter two studies will be presented in more detail because of their saliency and certain comparability to the present topic.

In 1960, the AACTE did an extensive study of the doctoral recipients in education for the years, 1956-58 (19, 84, 96, 153). The reports contain many findings, some of which are on student characteristics and institutional programs. The report recommended comprehensive analyses of programs that are preparing graduates for professional competencies and more definitive indices of students' motivational patterns and career aspirations.

Wilder's study of experts in the field of reading research contains a comparison of the group according to the type of doctoral degree the expert earned. He found that, by controlling for the level of teaching experience the expert had had and the year in which he obtained the degree, the Ph.D.'s scored higher on indices of both research training and research career orientation (149).

Sieber and Lazarsfeld in their 1964-1965 questionnaire surveys of deans, research coordinators, and directors of research organizations of graduate institutions of education obtained detailed institutional information, such as types of training programs and experiences in research afforded graduate students, kinds of relationships between schools of education and departments outside the school of education, academic programs for training in research, and problems related to training in educational research (119). Since this writer was a research assistant on the project, an opportunity to formulate and insert questions pertaining to the present study was available. Thus, data from their study have been used for further analyses in this report.

The purpose of Brown's study* was to investigate the 1963-64 doctoral recipients in education "with respect to (a) their personal and sociological characteristics, (b) their motives in entering the doctoral program, (c) their perception and evaluation of their experiences during the program, and (d) their present professional aspirations" (18, p. 3). The second purpose was to make comparisons between this group and the 1956-58 group in the study by the AACTE. The population to be studied was defined as all doctoral recipients in education who received the degree between September 1, 1963 and August 31, 1964; the total usuable returns numbered 2,067 individuals, 83.1 percent of the total sample.

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*The writer is gratefully indebted to the American Association of Colleges for Teacher Education for the receipt of a copy of Dr. Lawrence D. Brown's study, Doctoral Graduate in Education: An Inquiry into Their Motives, Aspirations, and Perceptions of the Program, Cooperative Research Project No. S240. Indiana University Foundation, Bloomington, Indiana, 1966. (Mimeographed).

Many factors and activities of the doctoral recipients were examined according to six independent variables; namely: (1) major versus minor producing institutions, (2) major field, (3) length of program, (4) age of graduate, (5) community origins, and (5) type of degree earned--Ed.D. versus Ph.D. Four items pertaining to research were examined. They were: (1) the extent of ongoing research there was in the field of the doctoral recipient's interest and institution, (2) the extent of opportunities for doctoral students to participate in this research, (3) the characterization of the program of the individual's university in terms of relative emphasis of production of individuals competent in research as opposed to production of competent college teachers, and (4) the doctoral dissertation at their university seeming to be perceived more as a laborious exercise than as a real intellectual experience eventuating in useful knowledge.

According to the first item, the extent of ongoing research perceived, a little over one-fourth of the sample indicated that the amount of research in their field was either to a small extent or not at all. (One certainly entertains the idea that under such conditions students in education may not see educational research as an academic pursuit in its own right and that career decisions for research are tenuous.) However, students from the major producing institutions and the younger group both tend to see a great deal more ongoing research in their field or interest than their counterparts. Also, the degree groups show independence on this item: the Ph.D.'s perceive ongoing research in their field either to a very great extent or not at all

According to the item, the extent of opportunities to participate in this research, twenty-six percent judged the extent of opportunity to be from small to non-existent. There was indication of a slight lag between the amount of ongoing research and the extent of opportunities to participate in the research. The younger group, who seemed more often able to obtain assistnatships tended more to feel free to participate in the ongoing research of their field. Although not statistically significant, there was a trend for the Ph.D.'s to see themselves freer to participate in the research than the Ed.D.'s.

According to the third item, relative emphasis on production of individuals, students from the larger institutions were more likely to indicate an overemphasis on research while those from the small graduate institutions of education were more likely to perceive an overemphasis on teaching. Also, the degree groups differ on the relative emphasis of production of individuals competent in research as contrasted to production of competent college teachers. The Ph.D. was more likely to see an overemphasis on research and an underemphasis on teaching. However, the Ed.D. was more likely to indicate a proper balance along with an overemphasis on teaching and an underemphasis on research.*

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*Further research is needed to study the effects of such assessments on future models of research training and on patterns for potential commitment to research.

According to the fourth item, the doctoral dissertation seeming to be perceived as more of a laborious exercise, almost one-fourth of the sample agreed to this negative assessment of the dissertation. Although the degree groups yielded no significance, the age groups did. The younger group as contrasted to the older group seemed less likely to have no opinion, more likely to disagree, and less likely to disagree strongly with the statement.

Finally, since this writer will be analyzing comparable data, it is worthwhile to observe Brown's findings concerning time allocation of responsibilities in the present position. He reported that "it is rare indeed for these recent graduates to be devoting a greal deal of time to research and writing" (18, p. 183). The younger group was more likely to be involved in teaching, much more likely to be involved in research, and less likely to have administrative responsibilities. The older group, however, was more involved in the activity of service. And according to this dimension of time devoted to professional activities, the degree groups differ even more significantly. The Ed.D.'s were more likely to have supervisory responsibilities, much less likely to be involved in research and in writing, and somewhat less likely to have a service-dimension in their position. On the other hand, the Ph.D.'s were less likely to be involved in administration than the Ed.D.

The final study to be reported rather extensively in this section of related literature is The Training in Educational Research by Buswell, McConnell, et al.[2] The project examines the personal characteristics, training, and research productivity of persons granted the Ph.D. or the Ed.D. degrees by graduate institutions of education in 1954 and 1964 and of 31 established researchers in the United States, chosen on the basis of outstanding research in this field. Since the writer presents the data for the questionnaire survey of the 1964 doctoral recipients as a part of this report, only the salient findings for the 1954 group will be presented here (23).

Analyses of data were based on 818 individuals, 72 percent of the sample that received the questionnaires. Comparisons on many characteristics were made between those who had published at least two research studies, 12.3 percent of the useable returns, and those who had published no research by their own declaration, 30.8 percent of the sample.

There are three major classifications of variables. They are student selection variables, graduate program variables, and post-doctoral variables. According to the first classification, only six of the 10 variables, dealing with recruitment and selection of doctoral students, were significant to later research production.

1. Individuals who receive the degree by the age of 32 or younger have been more productive than those who obtained the degree at the age of 40 or above.

2. The productive research group made an earlier decision to pursue graduate work.

3. Teaching experience was negatively related to research production.

4. The researchers were more likely to have done their undergraduate work in universities where there are graduate programs for the doctoral degree.

5. The research group were less likely to have taken undergraduate courses in education.

6. Of all the undergraduate major subject areas, a major in psychology was represented by more researchers than the non-researchers.

(No significant differences occurred according to the remaining four variables of this classification: Marital status at the time of graduate studies, parents' engagement in educational work, educational background of the parents of the doctoral recipient, and the original objective sought in taking graduate work.)

In the second classification, graduate program variables, five of the ten variables did yield significance to justify inclusion in the multivariate analysis.

1. While a graduate student, individuals who had participated in doing research, either as an assistant in a research organization or as an assistant to a professor, became members of the research group in this study.

2. Those who had published at least one research study prior to obtaining the doctorate were more likely to pursue such activity.

3. Significantly more of the researchers had followed their doctoral program on a full-time basis.

4. Public universities provided more of the researchers than the non-researchers.

5. At the time of receiving their degree more of the non-researchers were in debt than the researchers.

(No significant differences occurred according to the remaining five variables of this classification: having teaching assistantships during the doctoral program, the number of courses taken outside the department of education, the number of courses taken in research methods and statistics, the preparation of a master's thesis, and the particular sub-field of education in which the individual majored as a doctoral student.)

Of the final classification, post-doctoral variables, six had importance for research production in the future.

1. It is in the major universities that confer doctoral degrees that the most favorable climate for doing research exists.

2. The doctoral recipients who publish their first research within three years following the receipt of the degree are much more productive than those who delay such activity.

3. Researchers are more inclined to pursue the problem studied in their dissertation.

4. There is a noted difference between the researcher and the non-researcher with respect to the percent of time made available for research.

5. The research group make more use of the provisions for sabbatical leave.

6. Researchers assume heavier responsibilities for advising doctoral candidates.

Since the 1964 doctoral recipients had had no opportunity to establish an index for research productivity, Buswell presented comparisons based on all doctoral recipients in 1954 and 1964. There was a remarkable degree of similarity.

In contrast to the studies cited above, the central points of investigation for the present study are to survey the organizational characteristics of graduate institutions of education and any subunits that may be considered relatively important in discussing the production of researchers by these two institutional settings and to ascertain individual characteristics that may be considered relatively important in discussing the development of patterns for potential commitment to research by recent doctoral recipients in education.

D. Procedures and Techniques

The techniques which were used for the project represent two major kinds of data: data which the investigator collected and data which were already existing and analyzed for the purpose of this study by the writer. The sources of data include the following: content analysis of the catalogues of graduate institutions of education; questionnaire surveys of (1) deans and research coordinators of graduate institutions of education, (2) directors of research organizations, (3) behavioral scientists outside the department of education, and (4) recent doctoral recipients of education; documentary analysis of materials obtained through the questionnaires and through field trips prior to and during the undertaking of Sieber's and Lazarsfeld's project, The Organization of Educational Research; and interviews with professors, graduate students, and recent doctoral recipients from graduate institutions of education. Each source is briefly discussed.

1. Content analysis of catalogues.

The writer examined the 1963-1965 catalogues of 110 graduate institutions of education that offer the doctorate in education. The name, the hour-credit and the number of research courses, the number and type of research entrance requirements to the research courses, and the location of the research courses within the department(s) or division(s) of the graduate institution of education were analyzed. This task yielded a measure of opportunities for coursework in research, which could be contrasted with the opportunities of apprenticeship, as organizational characteristics related to production of researchers by institutions.

At the same time,there was collected additional information concerning such items as the type of doctorate in education administered by the graduate institution of education, the time the degree was first administered, jurisdiction of the doctoral program and important time periods of graduate instruction in the university to which the department of education belongs.

Preliminary findings of this technique appeared in a memorandum in October 1964 (120). Also, these findings were utilized in the final report, The Organization of Educational Research (119, Chapter VII, pp. 289-300).

In Appendix A of this report,one will find the format of the work sheet with the listed criteria for the inclusion and the exclusion of recording courses and some selected marginals of the additional data collected by the writer.[3]

2. Questionnaire surveys.

2.1 Institutional surveys of the deans, the research coordinators, and the directors of research organizations in schools or departments of education. As part of Cooperative Research Project No. 1974, data for the institutional surveys were collected by Sieber and Lazarsfeld. In each survey the writer designed and inserted questions pertinent for the present investigation.

Brief descriptions of the questionnaires and procedures follow.

A mailed questionnaire in May 1964 was sent to 109 graduate institutions of education that granted the doctorate in 1963-64. (In some instances, field representatives administered the questionnaires.) In the process of the study two institutions were dropped. Of the remaining 107 institutions, 68 represented graduate schools that had no research coordinator or committee chairman responsible for faculty research. Sixty-nine percent of the 107 deans of graduate schools or department of education were useable returns. Of the 39 graduate schools where both the dean and the research coordinator existed, 82 percent of the coordinators and 72 percent of the deans responded. In all 81 (or 76 percent) of the 107 graduate institutions represented useable institutional data.

The instrument covered the following major topics: institutional data; research and other goals of the graduate program; arrangements for research and service; field service bureaus; research bureaus; research teams outside of bureaus; individual projects outside of research bureaus; support for research outside of bureaus; general educational opinions and problems of educational research; and personal information about the dean or coordinator. The deans of the graduate department or school of education where no coordinator existed received a twenty-seven-page questionnaire; the deans, where research coordinators existed, received a sixteen-page questionnaire; and the coordinator received a twenty-four page questionnaire. The design of the instrument consisted of close-ended and open-ended types of items.

The questions the writer assisted in designing and inserted in the questionnaires covered the number of graduate students and doctoral students registered at each institution of education, type of graduate preparation emphasized, formal entrance requirements to the graduate program, apprenticeships on projects, and types of training programs for research. These data plus other salient institutional data were coded for purposes of this project.

In February, 1965, a mailed questionnaire was sent to 134 directors of research organizations. Eighty-four (or 63 percent) of the organizations returned the questionnaires or replied by letters. Twenty of these returns were not useable: three of the units did not participate and the remaining seventeen were not either research organizations or affiliated with the graduate institution of education. Thus, there were 64 useable returns from the directors of research organization.[4]

The thirty-page instrument covered the following major topics: historical information about the research unit; administrative control; responsibilities of the director; activities of the unit; training of graduate students in the unit; professional personnel in the unit; financial support; general educational opinions and problems of educational research; and personal information about the director. The design of the instrument consisted of checklist and open-ended types of items.

The questions the writer assisted in designing and inserted in the questionnaire for the purposes of this project covered the training of graduate students in the unit. Again, these data plus other salient organizational characteristics of the units were coded according to the purposes of this study.

In Appendix B-1 and 2, the design of the instruments for the deans' and coordinators' institutional questionnaire and for the directors' questionnaire is given in more detail. Also, there is a listing of the questions that the writer inserted in each instrument.

2.2 Questionnaire survey of behavioral scientists in departments outside the graduate institution of education. As part of Cooperative Research Project No. S-087, "Educational Research and the Liberal Arts," Brown sent mailed questionnaires to 367 psychologists and 340 sociologists in the academic departments of 77 of the 107 universities that were included in Sieber's and Lazarsfeld's project. The return rate was 43 percent for the psychology sample and 52 percent for the sociology sample. The instrument covered the following major topics: acquaintance with educational research on part of the behavioral scientist; contact with scholars in education and reaction to the teaching of graduate students in education; features of their research; opinions on selected issues in education; and background and career information. The design of the instrument consisted of close-ended and open-ended types of items.

The questions the writer designed and inserted in the questionnaire for the purposes of this study covered the contacts the behavioral scientist had with graduate students in education whom they taught and their assessments of such contacts. In Appendix B-3, the design of the instrument for the behavioral scientists' questionnaire is given in more detail. Also, there is a listing of the questions that the writer inserted in the instrument.

2.3 Questionnaire survey of the 1964 doctoral recipients in Education. As part of Cooperative Research Project No. 51074, Buswell, McConnell, et al. collected data for doctoral recipients in education in the years 1954 and 1964.

The authors obtained a list of 1495 individuals who received either a Ph.D. or an Ed.D. degree in Education in 1954, based on information furnished by 102 of the 103 granting institutions. Excluding foreign students and those that had been misclassified, the list was reduced to 1370 valid cases; later the list represented 1129 subjects for whom addresses were available. Returns to the well devised eleven-page questionnaire were received from 818 individuals (or 72 percent) of the sample for whom addresses were known and to whom the questionnaire had been sent.

The authors obtained a list of 2432 individuals who received either a Ph.D. or an Ed.D. degree in Education in 1964, again based on information furnished by 102 of the 103 granting institutions. The list was reduced to 2260 valid cases; and later the list represented 2189 subjects for whom addresses were available. Returns to the eleven-page questionnaire were received from 1750 individuals (or 80 percent) of the sample to whom the questionnaire had been sent.

The first eight pages of each instrument were identical. The questionnaire for the 1964 doctoral recipients covered the following major topics: student selection variables; graduate program variables, post doctoral variables; recent costs of graduate work; and detailed statements concerning the dissertation. The design of the instrument consisted of checklist and open-ended types of items.

The writer added to the data cards of the 1750 subjects certain organizational characteristics of the graduate institutions of education that the individuals attended. The information was obtained from the Sieber's and Lazarsfeld's study. In Appendix B-4, the design of the instrument for the 1964 doctoral recipients' questionnaire is given in more detail. Also, there is a listing of the items that the writer added to the data cards.[5]

3. Documentary analysis.

Prior to the initiation of the Sieber's and Lazarsfeld's institutional surveys, interview schedules had been performed with a few selected directors of research organizations affiliated with graduate institutions of education. The questionnaires of the institutional surveys were also supplemented by documents of various kinds which were solicited through the questionnaires and through field representatives of the study. The main kinds of data obtained were: annual reports of the institutes, histories of the schools of education, research reports, and self-surveys by the institutions concerning research activities and placement of doctoral recipients. These documents provided statistical evidence that not only supplemented certain questions in the instruments of the surveys but also permitted some case studies of a few institutions and, especially, the research organizations of the institutions.

As stated in footnote two of this chapter, the primary purpose of the case studies was to obtain statistical evidence, where available, and impressions about the training in educational research by graduate institutions and by research organizations.

4. Qualitative interviews.

Twenty interviews were obtained from three sources: five professors who taught research courses in schools of education or in a behavioral science department outside the school of education; three recent doctoral recipients in education; and twelve doctoral students: eight in the school of education and four in the department of sociology. The interviews were conducted in the New York City area and the Columbia, Missouri area. The interview schedules for each group lasted on the average of about one hour. Some questions were structured and administered to all three groups; the remainder of the interview schedule utilized the non-directive technique.

The primary purpose of this procedure was to obtain background data for the project. Subsidiary purposes were (1) to supplement data obtained for the documentary analyses and (2) to assist the writer in formulations of questions inserted in the institutional questionnaire surveys and in the behavioral scientists' survey.

In Appendix B-5, the design of the interview schedule for each group of interviewees is given in more detail.

The remaining chapters of the report cover the findings to date.

Footnotes for Chapter II

1. Production of researchers has been defined in three recent reports as the dean's estimated proportion of doctoral recipients in the past three years whose first position after receiving the degree was full-time research (90, p. 9; 119, p. 259; 121). Since data are available from the questionnaire survey of the 1964 doctoral recipients, the number of recipients entering their first position where professional time devoted to research is 50 to 100 percent is used for analyses of this report.

   Interestingly enough, when production of researchers is defined by the doctoral recipient's estimate rather than by the estimate given in the institutional survey, different results occur in some instances. Chapter four will present some of the differences that result, when the definition of production of researchers is by the dean's estimate or by the 1964 doctoral recipient's own estimate. Perhaps the different results are illustrative of Barton's statement: "One troublesome problem arises when organizational characteristics are indicated not by the aggregated perceptions of a sample of members but by the perception of a single informant; . . . " (6, p. 62).

2. Since these authors initiated their study approximately the same time as this writer did and since they investigated the doctoral recipients of a calendar year that had been proposed in this project, the sponsors of this study recommended that a request be extended for the use of the data for the purposes of this study. The writer is gratefully indebted to these authors for permission to use the data of 1964 doctoral recipients for the purposes of the report.

   It is interesting to note that, according to the summary of the comparisons between the 1954 and 1964 groups of doctoral recipients in education, a remarkable degree of similarity exists. Furthermore, states Buswell, "Unless some new post-doctoral factors are introduced promptly there is little reason to expect any different record of research production from the 1964 group than for the 1954 group except for the important addition of greatly augmented research funds. But the training background of those who will use these resources is more like than different from that of the 1954 doctors" (23, p. 53).

   A similar conclusion was reached by the writer through some preliminary analyses of production of researchers by graduate institutions of education and by research organizations and through a few case studies of research organizations. The case studies explored such items as what characteristics might be considered important for research activity and training in the organization and why some research organizations within the same graduate institution may have a higher proportion of doctoral students in education working in them than others. Based on these analyses, there was a recommendation that at this time an investigation of doctoral students who are now in the process of completing their doctoral program would not seem to yield that many nuances on the training for educational research.

However, in light of the recently increased funds for research and training in research and of some newly established programs for careers in research by some graduate institutions of education, it is recommended that doctoral students in education be an important sample of a future study on the development of professional personnel in educational research.

Also, Buswell's statement for a replication of his and his colleagues' study at a later period to examine the issues that may result from their study's recommendations is salient.

3. For a similar analysis of school catalogues which had a slightly different set of categories, observe Krathwhohl, David R., "Current Formal Patterns of Educating Empirically Oriented Researchers and Methodologists," in The Training and Nurture of Educational Researchers. Sixth Annual Phi Delta Kappa Symposium on Educational Research (77, pp. 73-93).

4. According to Sieber, "an examination of the names of the units which did not respond revealed that virtually all of them were designed as testing, service, study council, laboratory, or counseling facilities. Hence we feel rather confident in having obtained useable questionnaires from approximately nine out of ten empirical research units affiliated with graduate schools or departments of education. This figure, however, must remain an educated guess" (119, pp. 18-19).

5. As noted in the brief descriptions of the deans' questionnaire survey by Sieber and Lazarsfeld, the number of institutions which were included in the survey was 109. However, in the California-Survey, there were 103 degree-granting institutions represented. The return-rate for the Columbia-survey was 81 institutions; for the California-Survey, 99 institutions.

   Data from ten of the 81 institutions in the Columbia-Survey were not usable for the California-Surveys: eight institutions were not included in the California-Survey and two graduate institutions had no 1964 doctoral recipients.

CHAPTER III

PRODUCTION OF RESEARCHERS BY GRADUATE INSTITUTIONS OF EDUCATION

As stated in the preface, the issues concerning the preparation of educational researchers have become more sharply defined in recent years. The increased financial commitments to research and development by the Office of Education and the availability of new funds for research projects in graduate institutions of education are but two reasons for giving urgency to the demand for increasing the number of qualified research trainees. This demand in turn necessitates a systematic examination of the present conditions for preparing research trainees. The findings of such a study may yield insights into the development of professional personnel in educational research.

Thus, it becomes the purpose of this chapter to relate the opportunities that exist in graduate institutions of education for preparation in research. Secondly, there is an analysis of production of researchers by the graduate institutions according to institutional characteristics and arrangements that may be associated with the institutional output of researchers. The chapter has four sections: (1) a framework for examining the development of professional personnel in educational research; (2) an overview of programs and activities for training in research provided by graduate institutions of education; (3) production of researchers by graduate institutions according to certain organizational characteristics; and (4) a brief summary of the findings reported in the chapter.

A. A Framework for Examining the Development of Professional Personnel in Educational Research

The literature on the subject of training in research suggests three major areas of concern. The first area of concern is the type of abilities needed for research -- the recruitment and acceptance of highly qualified students to the graduate program. Secondly, concern is expressed about the type of research environment the graduate institutions are not too effective where the faculty are not themselves involved in research and where a research environment in the institution is not evident to the graduate students. The third area of concern that the literature discusses is, of course, the formal and informal arrangements for students to obtain experiences in research. Such arrangements include, among others, courses in research methodologies, supervision of the dissertation, special programs for training in research, and the differentiated academic programs for the two types of doctorate in education. Although the three contexts for analyses are treated separately, they are assumed to be interrelated.

The data reported in this chapter and in the chapter on research organizations reflect predominantly the attributes of the organization. By observing the behavioral patterns of the socializer and the psychological, social and cultural characteristics of the setting for socialization, one may be able to discern institutional efforts for the production of researchers.

A study of the attributes of the socializee provides information concerning the type of recruitment procedures that may yield more favorable results for production of researchers. Data presented in chapter six predominantly reflect the characteristics of recent doctoral recipients that are associated with potential commitment to research.

B. An Overview of Programs and Activities for Training in Research Provided by Graduate Institutions of Education

According to the 1964 institutional survey of deans of graduate institutions of education,eight out of ten deans consider the quality of research training provided in graduate schools or departments of education to be a hindrance to the advancement of educational research. Also, 47 percent (73) of these deans check the item as a major hindrance.

Although most deans do not visualize relinquishing most of the research training of their graduate students to a source outside the school of education, almost one-third of the deans (31 percent) either agree with or are undecided about the issue. Table 3.1 provides information on the debatable issue (page 50).

Although there may be extremities of terminology in the wording of this questionnaire item, the phrases used in the opinion imply some difficulties that graduate institutions of education may have in preparing both the researcher and the practitioner. Furthermore, the attitude implies that such difficulties may affect the quality of research training provided by the graduate institution.* To obtain perspective

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*In Appendix E of the report, there are tables providing data on the level agreement by deans on general educational opinions

TABLE 3.1.--Proportion of deans of graduate institutions of education according to the level of agreement on the opinion, advisability of receiving training in research outside the school of education.

Students should receive most of their research training outside the school of education.	Proportion of Deans
Strongly agree	3%
Mostly agree	14
Undecided	14
Mostly disagree	53
Strongly disagree	17
	101%
Number of institutions:	(72)

on the deans' responses to the above attitudes, an assessment is needed of the preparation for research provided by the graduate institutions of education.

Only about one-fourth of the institutions stress the preparation for research as the primary emphasis of the graduate program. And only 7 percent exclusively treat the preparation for research as the major goal. As shown in Table 3.2 (page 52), the larger proportion of schools that emphasize graduate preparation for research, also stress the preparation for positions of teaching and administration in colleges and public schools (10 percent). The data reflect that relatively few have the institutional goal for the preparation of future researchers.

Another organizational characteristic that indicates an activity in which the institution invests resources for the training of researchers is the existence and type of training program for people who want to make research a career. Data in Table 3.3 (page 52) show that slightly over one-fourth (27 percent) of the institutions provide such training through the regular degree program. Half of the schools do not provide training programs for potentially committed researchers in education. Again, the data indicate the need for more institutional commitment of resources for the training of future researchers.

The analysis of the institutional questionnaire survey of graduate institutions of education shows, however, that some institutions that

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and problems facing educational research according to certain organizational characteristics of graduate institutions of education. (Percentages in the Appendix and the text of the chapter are based only on questions answered by respondents of the survey.)

TABLE 3.2.--Proportion of institutions according to the type of preparation that receives the greatest emphasis in the graduate institution of education.

Type of Preparation Emphasized	Proportion of Schools	
Research		
Research alone	7%)	24%
Research plus public school	6)	
Research plus college	1)	
Research plus public school and college	10)	
All other (excluding research)		
Public school	39)	77%
College	24)	
Public school and college	14)	
	101%	
Number of institutions:	(72)	

TABLE 3.3.--Proportion of institutions according to the type of training programs for those who desire to make research a career.

Type of Training Program	Proportion of Schools
Special	22%
Part of the regular degree program	27
None	51
	100%
Number of institutions:	(73)

emphasize the graduate preparation for research do not provide special programs for training in research. Also, the analysis points to a number of schools that have special programs in training for research but do not emphasize the preparation for research. Table 3.4 (page 54) shows the proportion of schools according to these two organizational variables.

Another way of presenting the combination of the organizational goal and activity for preparation of researchers is to observe the proportion of schools according to the combination of the institutional characteristics. Table 3.5 (page 54) presents the data.

The data shown in Table 3.5 illustrate the point that the larger proportion of graduate institutions of education neither emphasize preparation for research nor provide training programs for future researchers (47 percent). In all, only 19 percent of the institutions both stress and provide for the preparation of researchers. In other words, according to the 1964 institutional survey of graduate schools or departments of education only a very few institutions provided overt behavioral patterns indicative of preparing individuals for careers in research.

Before pursuing the overview of other organizational activities for students to obtain skills, routines, and sensitivities in research, it is interesting to observe an analysis of these two organizational characteristics, according to the two attitudinal items presented at the onset of this section. For the first opinion, the quality of research training provided in graduate institutions of education is a hindrance to the advancement of educational research, about the same proportion of deans from schools emphasizing the graduate preparation for research

TABLE 3.4.--Proportion of institutions according to the type of graduate preparation emphasized in the institution and the type of program for training researchers that is provided by the institution.

	Type of Preparation Emphasized				
	Research		Non-research		
Type of Training Program	Alone	Plus others	College	Public School	College + Public School
Special	20%	20%	18%	24%	0%
Part of the regular degree program	60	60	18	16	43
None	20 100%	20 100%	65 101%	60 100%	57 100%
Number of institutions:	(5)	(10)	(17)	(25)	(7)

TABLE 3.5.--Proportion of institutions according to the combination of the organizational goal and activity for preparation of researchers that the institution provides.

Combination of Organizational Goal and Activity		Proportion of Schools
Graduate Preparation Emphasized	Type of Training Program	
Research	Special	5%
Research	Part of the regular degree program	14
Research	None	5
Non-research	Special	14
Non-research	Part of the regular degree program	16
Non-research	None	47
		101%
	Number of institutions:	(64)

as well as for non-research visualize the item as a hindrance (76 percent and 79 percent, respectively). However, the deans representing schools that have a training program do differ according to this problem facing educational research. Table 3.6 provides the information.

TABLE 3.6.--Proportion of deans according to the existence of a program for training in research and the level of agreement on a hindrance to the advancement of educational research, the quality of research training provided in graduate schools or departments of education.

	Existence of a Training Program	
Quality of research training...is a hindrance...	Yes (special plus part of the regular degree program)	No
Major	59%	35%
Minor	31	35
No	9	29
	99%	99%
Number of institutions:	(32)	(34)

As shown in Table 3.6, the deans of schools which are overtly committed to the activity of training researchers tend to visualize the problem more as a major hindrance. Perhaps involvement in the institutional activity heightens their awareness of the strengths, weaknesses, and effectivenesses of providing such programs.

According to the attitude, advisability of receiving training in research outside the school of education, more deans (31 percent) of the 16 institutions that stress the graduate preparation for research are undecided about the issue than their counterparts (9 percent). Table 3.7 presents the level of agreement on the item.

TABLE 3.7.--Proportion of deans according to the type of graduate preparation emphasized in the graduate institution of education and the level of agreement on the item, the advisability of receiving most training in research outside the school of education.

"Students should receive most of their research training outside the school of education."	Type of Preparation Emphasized	
	Research (alone plus others)	Non-research
Strongly agree	0%	4%
Mostly agree	19	13
Undecided	31	9
Mostly disagree	31	60
Strongly disagree	19	13
	100%	99%
Number of Institutions:	(16)	(53)

Although deans of schools that both provide and do not provide a program for training future researchers do not visualize relinquishing the research training of their students to an outside source, slightly more deans of schools providing a training program do agree with the opinion (23 percent vs. 15 percent). Consideration of the level of agreement on this item, according to the combination of the organizational goal and activity for preparation of researchers, points up slightly more agreement by deans representing schools that both emphasize preparation for research and provide a training program. Table 3.8 (page 57) shows the data.

On the whole, the deans of graduate schools of education do not visualize their institutions' relinquishing the training of educational researchers to another source outside the school of education. According to certain institutional variables, however, analysis of the

TABLE 3.8.--Proportion of agreement by the deans on the opinion, the advisability of receiving most training in research outside the school of education, according to the type of graduate preparation emphasized and the existence of a program for training researchers.

	Type of Preparation Emphasized	
Existence of a Training Program	Research (alone plus others)	Non-research
Yes (special plus part of the regular degree program)	45% (11)	39% (18)
No	33% (3)	27% (30)

situation do reveal conflict about the issue. This conflict does not necessarily imply hindrance to the development of professional personnel in educational research. In fact, the dialogue on the issue may imply need of two environmental changes in graduate schools of education. First, there may be need of increasing and sustaining certain research features and resources for preparation of researchers. Secondly, there may be a need for increasing and sustaining for research purposes the interdisciplinary relations between the graduate institutions of education and other academic departments and professional schools outside the schools of education. Thus, joint interests and efforts in the research of educational problems may enhance the total enterprise.

The general conclusion that there may be a lack of opportunities for students to obtain experiences in research is further substantiated when the activity of apprenticeships on projects is analyzed. According to the 1964 institutional survey, the proportion of research projects being performed that have graduate students with the projects is relatively small. Table 3.9 presents the situation.

TABLE 3.9.--Proportion of all research projects being performed that have graduate students with them according to the type of institutional setting and the type of research investigation by the faculty.*

Type of Research Investigation by the Faculty	Type of Institutional Setting Institutions with research units: Inside the unit	 Outside the unit	 Institutions without units
Single investigator	**	40% (417)	29% (100)
Research teams	**	61% (82)	67% (33)
Total	51% (348)	42% (470)	34% (125)

*Data for the percentages represent both questionnaire items being answered for each institution and each bureau: i.e., the number of projects with students and the number of projects being performed.

**Data are not available to compute the percentages.

As shown in Table 3.9, apprenticeships on projects in research organizations are more likely to occur than in the other two institutional settings.

Another set of data illustrates the point of the relatively small use of opportunities for students to obtain experiences in research, namely, the rather low number of students per research project being conducted in the graduate institution of education (see Table 3.10, page 59).

Stated another way, the mean number of doctoral students in education that are with projects being conducted in research organizations is 7.00 (58). The mean number of graduate students in education that are with projects being performed outside any research unit is 10.03 (35). And, the mean number of graduate students in education that

TABLE 3.10.--Number of students per research project that has students according to the type of institutional setting and the type of research investigation by the faculty.*

Type of Research Investigation by the Faculty	Type of Institutional Setting Institutions with research units: Inside the unit	 Outside the unit	 Institutions without units
Single investigator	**	1.51 (166)	3.05 (24)
Research teams	**	3.17 (48)	2.3 (27)
Total	1.93 (210)	1.76 (199)	2.15 (54)

*Data for mean number represent both questionnaire items being answered: i.e., the number of students with projects and the number of projects that have students with them.

**Data are not available to compute the percentages.

are with projects being conducted in institutions without research units is 5.7 (20).

For the research organizations that reported that doctoral students in education are affiliated with projects being performed in the unit, only a mean proportion of 10.21 (53) represents the registered doctoral students in education that affiliate with the research projects. And the mean proportion of graduate students in residence that affiliated with projects being conducted outside of any research organization is 5.66 percent (30). However, in institutions that have no research organization, the mean proportion of graduate students in residence that are with research projects is 7.36 percent (17).

In sum, it appears that one type of opportunity for obtaining experiences in research, apprenticeships on projects, is relatively rare.

These figures may imply that students in graduate institutions of education may not, on the whole, see educational research as an academic pursuit in its own right. Thus, career decisions for research may be rather tenuous.

The final analyses of the emphasis on preparation for research by the graduate institution are the actual numbers of doctoral recipients who upon the receipt of the degree enter positions where much of their professional time is devoted to research and, secondly, the quality of the research done by these doctoral recipients. The first type of analyses, the number of doctoral recipients who immediately enter positions where much of the professional time is devoted to research, is the chief concern of this chapter.

Before presenting the results of the analyses of the institutional data, a discussion is needed on the term, "production of researchers by graduate institutions of education." In some recent reports on the topic of training for careers in educational research, production has been operationally defined as the mean proportion of doctoral recipients who upon the receipt of the degree entered positions where research was the primary activity (90, p. 9; 119, p. 259, 121, p. 7). The data were obtained from the 1964 institutional survey of deans of graduate institutions of education by Sieber and Lazarsfeld (119).

However, upon the receipt of the data on the 1964 doctoral recipients from the study by Buswell, McConnell, et al. (23), the writer decided to use for the purposes of this study the actual number of 1964 doctoral recipients who upon the receipt of the degree entered positions where 50 to 100 percent of the professional time was devoted to research.

In this study, both the operational definition for production of researchers by graduate institutions of education and the source for the data on the measure differ from the reports cited above.

Rationale for using the data from the questionnaire survey of 1964 doctoral recipients in education is two-fold. First, the question addressed to the deans covered an estimate for the proportion of doctoral recipients in the past three years (1961-63). Since most of the data for the 1964 institutional survey of deans are based on the activities and the goals of the organizations for the academic year of 1963-1964, it seemed reasonable to use the data of the doctoral recipients who received their degree during the calendar year of 1964. In other words, the external and internal conditions of graduate institutions of education that were described by the deans in the 1964 institutional survey were applicable to the institutional environment in which most of the doctoral recipients spent their last year as doctoral students.

Secondly, when a comparison of the results for production of researchers is made according to the two sources of data for defining the term, some differences do occur. The differences are in the frequency with which certain institutional variables yield significance for production of researchers. Chapter four of the report presents a brief review of some of these differences.[1]

However, it is noted here that the mean proportion for production of researchers determined by the dean's estimate is not at the .05 level significantly larger than the computed mean proportion for production based on the data of the 1964 doctoral recipients' responses.*

For the purposes of this report the term, production of researchers by graduate institutions of education, is defined as the number of 1964 doctoral recipients who immediately entered positions where 50 to 100 percent of the professional time was devoted to research. The rationale for enlarging the range of professional time devoted to research is two-fold.

First, according to the cited studies on production of researchers, the definition of production incorporated only those doctoral recipients who immediately entered positions where research was the primary activity. The emphasis for interpreting the data was on highly committed young researchers. Enlarging the range of professional time devoted to research provides an emphasis for interpreting the data on not only highly committed but also potentially highly committed young researchers.

Secondly, by enlarging the range for professional time devoted to research, the actual number of subjects per institution does not increase very much. In fact, of the 123 doctoral recipients in education in 1964 that reported their professional time devoted to research was 50 to 100 percent, only 64 recorded the time to be exclusively between 50 and 99 percent. The remaining 69 individuals represented the two following categories: (1) 60 subjects entered full-time research in education, all types of positions; (2) nine subjects were classified

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*With 162 d.f., the calculated t-value, 1.622, is not significant at the .05 level:

$$\underset{\text{(Estimated Prop.)}}{6.092\%} - \underset{\text{(Computed Prop.)}}{3.848\%} \Big/ 1.338 .$$

as university professors. However, columns noted for professional time spent in research had been punched "100."

In conclusion, according to the two different ranges for defining professional time devoted to research, the institutional variables that yield significant results for production of researchers do not differ that much. (In Appendix C of the report, there are two matrices that show the results for production. Matrix C-1 provides information for production by graduate institutions, which has been defined as the number of 1964 doctoral recipients who immediately entered positions where research was the primary activity. Matrix C-2 provides the data for the results for production, according to the number of 1964 doctoral recipients who immediately entered positions where 50 to 100 percent of the professional time was devoted to research.)

Attention is now returned to the final presentation of data for the overview.

As stated previously, the final test for an institution's involvement in research training is the number of doctoral recipients who go into research. In 1964, only eight percent of the institutions had from six to nine doctoral recipients who immediately entered positions where the professional time devoted to research was from 50 to 100 percent.* Table 3.11 (page 64) gives the data.

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*Recall that the number of institutions reported in this chapter refers to the return-sample of the 1964 institutional survey of the deans of graduate institutions of education. The number of doctoral recipients, however, represents data from the questionnaire survey of the 1964 doctoral recipients.

TABLE 3.11.--Proportion of institutions according to the number of 1964 doctoral recipients who upon the receipt of the degree entered positions where 50 to 100 percent of the professional time was devoted to research.

Number of Doctoral Recipients	Proportion of Institutions
0	48%
1 - 2	30
3 - 9	22
	100%
Number of institutions:	(73)

Table 3.11 shows that almost five out of ten institutions produced not a single doctoral recipient who immediately entered a position where professional time devoted to research was from 50 to 100 percent. And, if one considers only those who immediately entered positions where research was the primary task, then almost six out of ten institutions had no doctoral recipient enter a position of full-time research. Table 3.12 presents data on doctoral recipients who immediately entered positions where research was the primary activity.

TABLE 3.12.--Proportion of institutions according to the number of 1964 doctoral recipients who immediately entered positions where research was the primary activity.

Number of 1964 Doctoral Recipients	Proportion of Institutions
0	59%
1 - 2	30
3 - 6	11
	100%
Number of institutions:	(73)

Both Tables 3.11 and 3.12 show a very low figure for the institutional output of professional personnel in educational research. In 1964 only about one in ten institutions produced more than three doctoral recipients who entered positions where research was the primary responsibility. Stated differently, in about three-quarters of the institutions, no more than two doctoral recipients immediately entered positions where 50 to 100 percent of their professional time was devoted to research.

In general, the production of educational researchers immediately following the receipt of the degree is quite small.

The following sections of this chapter examine, as a measure for the production of researchers by graduate institutions of education, the number of 1964 doctoral recipients who immediately entered positions where 50 to 100 percent of the professional time was devoted to research. This measure has been studied according to a number of institutional characteristics.

C. Production of Researchers According to Certain Organizational Characteristics

Before presenting the sections on the results for production of researchers, a brief explanation of the procedures for analyzing the data is given.

As stated in the section on objectives and hypotheses, the institutional variables of the study represent both external and internal characteristics of the organization. A listing of the 48 variables examined for this study may be found in Appendix C; included in the listing is the exact wording of each questionnaire item on which the institutional variable has been operationally defined. Variables have been dichotomized (or trichotomized) according to the nominal value or computed median or approximate median case.

The test statistic performed for analyses of data is the H-Test (145, pp. 436-438). The .05 level of significance is used. In Appendix C is a discussion on this technique.

According to a 48 x 48 matrix of institutional variables, significance for production of researchers by graduate institutions of education occurs under 170 sets of conditions. A set means one institutional variable appears with another variable to yield significance. (Recall that the Wallis-Kruskal H-Test is parallel to the one-way analysis of variance.) Of the 48 variables, 43 appear with another variable at least once to yield significant results. Fifty-three percent of the 170 sets of conditions are provided by eight institutional variables. The remaining 80 conditions are explained by 35 variables whose frequencies for yielding significant sets of conditions range from one to four.

Table 3.13 (page 67) provides the data for the eight institutional variables that may be considered relatively important in discussing the issues about the production of researchers by graduate institutions of education.

In Matrix C-2 of Appendix C, the results of the H-Test are given. (One can compare these values with the results for production of researchers defined operationally as the number of doctoral recipients who entered positions where research was the primary activity--Matrix C-1.) One will note that six of the variables

TABLE 3.13.--The rank order of eight variables that provide 53 percent of the 170 sets of conditions that yield significance for the production of researchers by graduate institutions of education according to the frequency of their occurrence.*

Rank Order	Institutional Variable	Number of Times the H-Test Yields Significance for Production of Researchers
1.	An index of research quality.	22
2.	A scale of university reputation.	17
3.	Level of admission to the graduate program.	14
4.	Level of agreement: low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research.	12
5.	Size of the doctoral program: number of registered doctoral students.	10
7.	Size of the social unit: proportion of doctoral degrees administered by the university in the academic year of 1962-63 that represent the doctorate in education.	5
7.	Primary responsibility of the graduate faculty in education is research: based on the dean's estimate of the judgment of three groups within the graduate institution of education.	5
7.	Institutional setting for obtaining data for the dissertation.	5

*Production is defined as the number of 1964 doctoral recipients who upon the receipt of the degree entered positions where 50 to 100 percent of the professional time was devoted to research.

mentioned in Table 3.13 also appear as six of the eight variables that provide 52 percent of the 192 significant conditions according to the second definition for production: namely, index of research quality, level of admission to the graduate program, scale of university reputation, the level of agreement on a hindrance to the advancement of educational research, and the size of the social unit. (Observe Table C-1 in Appendix C for the list of these variables.)

A final note on the procedure for presenting the results concerns one of the important variables of the study, a program for training future researchers. Although this variable does not appear with other variables rather frequently to yield significance, some tables are given for production of researchers according to the existence or type of training program and some other organizational characteristics. The reason for presenting the tables is to show the direction of results for production of researchers according to the presence of a program for training researchers.

The four sections that follow present tables on and discussion of the production of researchers according to certain institutional characteristics considered relatively important for the development of professional personnel in educational research.

1. Production of Researchers According to a Scale of University Reputation

A scale of university reputation represents the Keniston's scale (70). Because of too few cases in each of the categories of the scale, Top 10 and Next 12, they are combined into the category termed the

Top 22. Twenty-one of the 73 graduate institutions of education belong to universities that have not been included in the scale and are classified under the heading, not included in the scale. The remaining schools of the usuable return-sample of the survey are classified according to the categories presented in the Keniston's scale.

According to the external characteristic of the organization, a scale of university reputation, and 17 other institutional characteristics, significance for production of researchers by graduate institutions of education occurs.

In Table 3.14 (page 70) data are given for the mean number for production according to a scale of university reputation and the environmental characteristic, type of legal control, and two input characteristics; namely, an index of interdisciplinarily trained faculty and the financing of research projects by governmental sources. Under all these conditions significance occurs. An index of interdisciplinarily trained faculty represents the proportion of the graduate faculty that received most of their training for their highest degree outside any school of education. The other input variable represents the estimated proportion of funds in the past fiscal year (1962-1963) that represent governmental sources (state and federal) financing proposals originating with and done by the graduate faculty outside any research bureau.

As shown in Table 3.14, the direction of the results for production is more favorable according to the category of the scale, Top 22. The mean number for production is slightly higher according to this category and the public type of legal control (4.62).

TABLE 3.14.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and environmental and input characteristics of the graduate institution.*

Environmental and Input Characteristics	Keniston's Scale of University Reputation			
	Top 22	Other AGS...,plus	Other Universities	Not Included in the Scale
1. Type of Legal Control:				
Public	4.62 (8)	0.70 (10)	1.20 (15)	0.54 (13)
Private	4.00 (8)	0.50 (6)	0.40 (5)	0.12 (8)
2. Index of Interdisciplinarily Trained Faculty:				
High (9-85%)	4.83 (6)	0.62 (8)	0.50 (6)	0.73 (11)
Low (0-8%)	3.50 (6)	0.80 (5)	0.50 (8)	0.00 (7)
3. Financing Projects Performed outside any Research Organizations by the Source, Government:				
High (50-100%)	4.25 (4)	1.00 (4)	1.62 (8)	0.40 (10)
Low (0-49%)	3.60 (5)	0.33 (6)	0.78 (9)	0.50 (8)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

Production tends to be more favorable by graduate institutions belonging to the Top 22 universities and having a high proportion of interdisciplinarily trained faculty (4.83). Graduate institutions that have a high proportion of funds for financing projects from governmental sources and belong to the Top 22 universities tend to yield a slightly higher production under these two external characteristics (4.25).

It seems that the key question about an index of interdisciplinarily trained faculty is really not one of what proportion of the graduate faculty are represented as receiving most of their training for their highest degrees outside any school of education. The major issue is how these faculty members are used in the institution. In other words, are they hired as subject-matter specialists or as research specialists? For example, 11 of the graduate institutions that are mentioned as doing the most competent and worthwhile research belong to the Top 22 universities. Predominantly more of these institutions mentioned on this index of research quality have deans who prefer to hire for possible openings in their institutions professors trained outside a school of education. Is this type of faculty member hired with the understanding that his primary activity in the graduate institution is doing research rather than teaching a particular subject?

Compared to graduate institutions of education that belong to the remaining three types of universities on the scale, proportionately more that belong to the Top 22 universities have research organizations: 75 percent, as contrasted to 50 percent for schools belonging to "other universities," and 57 percent for schools not included in the scale. Also, according to the internal characteristic of the organization, a range of research topics on research is being conducted, none of the schools of education belonging to the Top 22 universities appears on the category designated a low range of topics.

In Table 3.15 (page 73) the mean number for the production of researchers is given according to a scale of university reputation and the social structure characteristic of the organization, the existence of a research organization; and the organizational activity, range of research topics on which research is being conducted outside any research organization. (The latter measure is determined by the number of substantive areas on which research is conducted.) Significance occurs according to these sets of conditions.*

Again, the direction of the results is more favorable for the "top quality" institutions with a high rating on the two research characteristics of the organization.

The dean was asked to estimate the judgment of 10 groups as to the rank order of field service, teaching, and research as responsibilities of the graduate faculty in education. The 10 groups represented: three in the school or department of education; four within the total university; the state legislature, the public school systems, and the funding agencies outside the university. Eight deans assessed no group to rank research as the first responsibility of the graduate faculty in

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*Although there were no cases in one of the k samples for the latter conditions and, thus, the d.f. were 6, the value of the H-Test, 19.65, even if 7 d.f. were used, yields significance at the .01 level.

TABLE 3.15.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and two research characteristics of the organization.*

Research Characteristics	Keniston's Scale of University Reputation			
	Top 22	Other AGS...,plus	Other Universities	Not Included in the Scale
1. Existence of a Research Organization in the Institution:				
Yes	5.17 (12)	0.50 (8)	1.23 (13)	0.17 (12)
No	1.75 (4)	0.75 (8)	0.57 (7)	0.67 (9)
2. Range of Research Topics on Which Research is Being Conducted outside any Research Organization:				
High (9-25)	4.21 (14)	0.25 (4)	1.33 (9)	0.14 (7)
Low (0-8)	No cases	0.70 (10)	0.88 (8)	0.54 (13)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

education. Only nine of the 66 deans who responded to the item stated that at least seven groups would rank research the primary activity of the graduate faculty in the department of education.

An assumption is that the more groups the dean assesses as seeing the primary responsibility of the graduate faculty to be research, the more production of researchers occurs. According to the assessment of this organizational role and a scale of university reputation, significance for production occurs.

TABLE 3.16.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and the primary responsibility of the graduate faculty in the school or department of education.

	Keniston's Scale of University Reputation			
Primary Responsibility of the Graduate Faculty is Research*	Top 22	Other AGS..., plus	Other Universities	Not Included in the Scale
High (3-10)	4.62 (8)	0.86 (7)	0.38 (8)	0.00 (5)
Low (0-2)	4.14 (7)	0.33 (6)	0.88 (8)	0.53 (15)

*The measure is determined by the dean's estimate of the judgments of 10 groups inside and outside the university.

Data in Table 3.16 imply, however, that only in the schools of the Top 22 does production appear rather significant according to the institutional characteristic, primary responsibility of the graduate faculty. In fact, schools that belong to the categories of the scale, other universities and not included in the scale, have a somewhat larger mean number for production when the rank on the primary responsibility is low than when the rank is high.

There are factors that some people claim are hindrances to the advancement of educational research. Significance for production of researchers occurs according to a scale of university reputation and four factors considered by the deans to be hindrances: namely, (1) intellectual ability of people doing research in education; (2) low standards for acceptance of research articles in journals; (3) lack of interest on part of administrators of schools...of education; and (4) lack of recognition and rewards for research accomplishment. Data are presented in Table 3.17 (page 76).

Proportionately more deans of graduate institutions of education in schools classified as the Top 22 feel the intellectual ability of people doing research in education is a hindrance. However, the mean production of researchers for the Top 22 is about the same according to each level of agreement on this factor of hindrance.

Although fewer deans of graduate institutions of education in universities representing the Top 22 feel the lack of recognition and rewards for research accomplishment is a hindrance, production of researchers by this group of institutions is still slightly higher than by the remaining schools belonging to the Top 22 universities.

Although about the same proportion of deans representing all classifications on the scale of university reputation state that low standards for acceptance of research articles in journals are a hindrance, the nine schools that belong to the Top 22 and whose deans state "no" to the hindrance have a very large mean number for production. In fact, a difference of 4.00 exists between these schools and the remaining 6 schools of the Top 22. One possible explanation for

TABLE 3.17.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and opinions about hindrances to the advancement of educational research held by deans of graduate institutions of education.*

Hindrances to the Advancement of Educational Research		Keniston's Scale of University Reputation			
		Top 22	Other AGS...,plus	Other Universities	Not Included in the Scale
1. Intellectual ability of people doing research in education:	Yes	4.30 (10)	0.38 (8)	1.00 (4)	0.56 (9)
	No	4.60 (5)	0.86 (7)	0.54 (11)	0.27 (11)
2. Low standards for acceptance of research articles in journals:	Yes	2.00 (6)	0.57 (7)	0.57 (7)	0.50 (8)
	No	6.00 (9)	0.62 (8)	0.75 (8)	0.33 (12)
3. Lack of interest in research on part of administrators of schools or departments of education:	Yes	4.70 (10)	0.50 (8)	0.29 (7)	0.42 (12)
	No	3.80 (5)	0.71 (7)	1.00 (8)	0.38 (8)
4. Lack of recognition and rewards for research accomplishment:	Yes	5.50 (4)	0.67 (6)	0.20 (5)	0.43 (7)
	No	4.00 (11)	0.56 (9)	0.90 (10)	0.38 (13)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

these results is that journals, representing an established procedure for publishing research studies, come under the scrutiny of all involved in the venture of educational research. However, if these deans who do not see the factor a hindrance represent institutions of education where there be a high level of research activity and, perhaps, a high level of publications in journals, it might be assumed that this factor is not considered as an important factor on a scale of hindrances to the advancement of educational research. This assumption may be supported by the fact that these same nine deans represent institutions that are mentioned on an index of research quality. (Table 3.55 presents data on the production of researchers according to this index of research quality and the level of agreement on the hindrance, low standards for acceptance of research articles in journals.)

Slightly more deans in schools classified as the Top 22 visualize that one hindrance is the lack of interest in research on the part of administrators of schools or departments of education. The mean number for production is the highest according to these conditions. Perhaps this is indicative of these deans being aware of and expressing the pressures evidenced in serving the needs of the research environment of the institution. This assumption may be strengthened by noting the results for production according to a scale of university reputation and an index of research quality.*

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*The latter measure is determined by the responses of deans and research coordinators of graduate institutions to the question, "Which graduate schools or departments of education in the nation are doing what you consider to be the most competent and worthwhile research?"

TABLE 3.18.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and an index of research quality.*

	Keniston's Scale of University Reputation			
Index of Research Quality	Top 22	Other AGS..., Plus	Other Universities	Not Included in the Scale
Mentioned	5.54 (11)	0.67 (3)	2.00 (2)	0.00 (0)
Not Mentioned	1.60 (5)	0.62 (13)	0.89 (18)	0.38 (21)

*The H-Test was not performed because some of the k samples had too few cases.

Eleven of the 16 deans who represent institutions that are mentioned on the index of research quality belong to universities classified as the Top 22 and state that the lack of interest in research on the part of administrators of schools...of education is either a major or minor hindrance to the advancement of educational research. Mean production of researchers by these 11 schools is the highest according to these conditions.

One type of administrative device that reflects an institutional activity is the formal entrance requirements for admission to the graduate program. Formal entrance requirements for admission may regulate the type of student who may apply for admission to the graduate program, who may be accepted or rejected for admission, and who may be affected directly or indirectly by the aims of the graduate program.* According to some writers on the subject of training for careers in research, the formal entrance requirement of professional experience discourages some students who may be research-oriented from applying to graduate institutions of education. Furthermore, they claim that requiring a teaching certificate or professional experience prior to admission to the graduate program screens applicants who are more than likely older and who are more oriented toward careers of teaching, administration, and service rather than toward a career in research.

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*According to the 1964 institutional survey of deans, some departments within the graduate institution of education do waiver for their own departments the formal entrance requirements for admission

Significance for production of researchers occurs according to a scale of university reputation and the formal entrance requirements for admission to the graduate program: (1) no requirements *vs.* at least one requirement; and (2) a version of the variable, professional experience required--yes *vs.* no. Again, mean production is the highest by institutions of education in the universities classified the Top 22. However, there is very little difference between the mean number for the schools that have at least one entrance requirement and those that have no formal entrance requirement. The same conclusion holds according to the second version of the variable, a scale of the university reputation and the requirement of professional experience for admission to the graduate program.

The same conclusion that there is little difference between the mean number for production of researchers, according to having or not

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to the institution's total graduate program; the department of educational psychology is an example. Only a few examples for such exceptions were noted in the 1964 survey, the institution was still classified as having a formal entrance requirement for admission to the graduate program.

TABLE 3.19.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and formal entrance requirements for admission to the graduate program.

Formal Entrance Requirements	Top 22	Other AGS	Other Universities	Not Included in the Scale
1. Version 1: None	4.62 (8)	0.64 (11)	0.62 (8)	0.44 (9)
At least one	4.00 (6)	0.60 (5)	0.62 (8)	0.36 (11_
2. Version 2: Professional experience required:				
No	4.40 (10)	0.67 (12)	0.55 (12)	0.31 (13)
Yes	4.25 (4)	0.50 (4)	1.00 (4)	0.57 (7)

having a formal entrance requirement, holds for all schools in the remaining three categories of the scale of university reputation.* Also, the same conclusion holds according to professional experience being required for admission to the graduate program.

The conclusion of almost no differences on the mean number for production according to the institution's having formal entrance requirements for admission to the graduate program may be further supported by the data in Table 3.20 (page 81). Production of researchers is not significant according to the institutional variables, requiring a teaching certificate and requiring professional experience.

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*Significance occurs in the 48 x 48 matrix only once more for this administrative device, formal entrance requirement, and another institutional characteristic; namely, an index of research quality. The data for the mean number for production according to these conditions are presented in Table 3.57.

TABLE 3.20.--Mean number for production of researchers by graduate institutions of education according to formal entrance requirements for admission to the graduate program.*

Professional Experience Required	Teaching Certificate Required: Yes	Teaching Certificate Required: No
Yes	1.67 (12)	1.00 (7)
No	0.82 (11)	1.47 (36)

*The computed H-value, 0.90, with 3 d.f., is not significant at the .05 level.

One possible explanation for the results not yielding differences as might have been expected is that the institution, not the individual department within the institution, is classified as having or not having a formal entrance requirement. However, some of the 1964 doctoral recipients included in the measure for production may represent a department of an institution that waivers any formal entrance requirement to the graduate program. Thus, the institutional measure for formal entrance requirements has not accounted for these exceptions. Another explanation is that the issue of formal entrance requirements for admission is more important as an individual characteristic rather than as an organizational characteristic associated with production of researchers. The latter point is explored in chapter six of the report.

Another administrative device representing an organizational activity is the type of doctorate administered by the graduate institution of education. One of the opinions about training for research in education is that the two types of doctorate in education differ.

The opinion is that the Ph.D. should be a research degree and the Ed.D. should be a professional degree. Do institutions differ on production of researchers according to a scale of university reputation and the type of doctorate in education administered? The H-Test was not performed according to these conditions because some of the k samples had too few cases. However, the data are presented in Table 3.21.

TABLE 3.21.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and the type of doctorate in education administered by the institution.*

	Keniston's Scale of University Reputation			
Type of Doctorate in Education Administered	Top 22	Other AGS..., plus	Other Universities	Not Included in the Scale
Ph.D. only	5.33 (5)	0.50 (6)	0.00 (0)	0.50 (2)
Ed.D. only	3.00 (1)	0.50 (2)	0.83 (6)	0.71 (7)
Both	4.17 (12)	0.75 (8)	1.07 (14)	0.17 (12)

*The H-Test was not performed because some of the k samples had too few cases.

Again, the direction of results is more favorable for institutions in the Top.22. Schools that administer only the Ph.D. in education have only a slightly higher mean number for production.

When the institutional variable, type of doctorate in education administered, represents a measure of the proportion of doctoral students working for the Ph.D., production of researchers is significant according to this measure and a scale of university reputation.

TABLE 3.22.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and the proportion of doctoral students working for the Ph.D. in education.

	Keniston's Scale of University Reputation			
Proportion of Doctoral Students Working for the Ph.D. in Education	Top 22	Other AGS..., plus	Other Universities	Not Included in the Scale
High (25-100%)	3.78 (9)	0.50 (10)	0.00 (4)	0.38 (8)
Low (0-24%)	5.20 (5)	0.60 (5)	0.64 (11)	0.46 (11)

There still exists a comparability of the mean number for production by graduate institutions belonging to the Top 22 universities and having either a high proportion or a low proportion of doctoral students working for the Ph.D. In fact, this similarity of mean number for production by institutions with either a high or low proportion occurs for the two other sets of conditions under which significance occurs; namely, according to the proportion of doctoral students working for the Ph.D. and (1) an index of research quality (Table 3.57) and (2) the proportion of the graduate faculty doing research (Table 3.62). Direction of the more favorable results is in institutions that rank high on the other institutional variable, no matter if the proportion working for the Ph.D. is or is not high. (The last point will be discussed more extensively in the section concerning the institutional variable, an index of research quality.)

One of the main issues for development of professional personnel in educational research is the opportunity afforded by the graduate institution for students to obtain routines, skills, and sensitivities of research. Four such activities considered in the study are research courses offered by the institution, apprenticeships on projects being conducted outside any research bureau, the institutional setting for obtaining data for the dissertation, and the existence of a program for training for careers in research.* Significance for production of researchers occurs according to a scale of university reputation and three of the above listed activities. (The only exception is with apprenticeships on projects. Although the H-Test was not performed because one of the k samples had too few cases, by observation, the mean number for production according to each of the samples does not differ that much. However, the direction of the results is still more favorable for the institutions in the Top 22.)

As shown in Table 3.23 (page 85), the results for production of researchers are more favorable for the graduate institutions of education in universities classified as the Top 22. The direction of the results is slightly more favorable for the institution that represents the more favorable conditions for opportunities to obtain experiences in research: namely, (1) a high proportion of the graduate courses in education are devoted to research courses; (2) a high proportion of research courses have research entrance requirements

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*The institutions that have no research organization were automatically classified for the variable, institutional setting for obtaining data, as "outside research units." For institutions with research organizations, the institutional survey of directors of research bureaus was used to determine the measure. If the director stated that no doctoral students in the department of education used the data or facilities of the unit in preparing their doctoral dissertations, then the institution was classified as "outside research units." If at least one research organization in the graduate institution of education was used for obtaining data, then the institution was classified as "inside research units."

TABLE 3.23.--Mean number for production of researchers by graduate institutions of education according to a scale of university reputation and certain activities for training in research provided by the institution.*

Activities for Training in Research	Keniston's Scale of University Reputation			
	Top 22	Other AGS...,plus	Other Universities	Not Included in the Scale
1. Courses:				
(a) Proportion of graduate education courses that are research courses:				
High (7-24%)	5.00 (6)	0.75 (8)	0.86 (7)	0.50 (12)
Low (1-6%)	3.90 (10)	0.50 (8)	1.08 (13)	0.22 (9)
(b) Proportion of research courses that have research entrance requirements:				
High (36-96%)	5.22 (9)	0.62 (8)	0.70 (10)	0.30 (10)
Low (0-35%)	3.14 (7)	0.62 (8)	1.30 (10)	0.46 (11)
2. Institutional setting for obtaining data for the dissertation:				
Inside Research Units	6.57 (7)	0.50 (4)	0.40 (5)	0.25 (4)
Outside Research Units	1.75 (4)	0.75 (8)	0.57 (7)	0.54 (11)
3. Existence of a training program:				
Yes (special + part of degree program)	4.64 (11)	0.29 (7)	1.70 (10)	0.20 (5)
No	3.50 (4)	0.83 (6)	0.38 (8)	0.50 (14)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are excluded from the computations.

(research prerequisites or permission of the instructor); (3) the institutional setting for obtaining data for the dissertation is inside research units; and (4) a program for training for careers in research does exist in the institution. For the last activity, the existence of a training program, proportionately more institutions in the Top 22 have this training feature.

In summary, data for production of researchers presented in this section have strongly indicated the relative importance of one environmental characteristic of the organization, the type of university to which the graduate institution of education belongs. Significance occurs for production of researchers by graduate institutions of education according to a scale of university reputation and 17 other organizational variables. They include, among others, the existence of a program for training in research, the existence of a research organization affiliated with a graduate institution of education, the financing of research projects being conducted outside any research unit by governmental sources, and the proportion of doctoral students working in the Ph.D. in education. The direction of the results based on the mean number for production of researchers indicates a more favorable situation for graduate institutions of education in universities classified as the Top 22.

Attention is now turned to an internal characteristic of the organization which is assumed to influence training and production in research; namely, the characteristic of social structure. The two organizational variables to be considered are level of admission to the graduate program and the size of the social unit.

2. Production of Researchers According to the Institutional Characteristics, Level of Admission to the Graduate Program and Size of the Social Unit

The first organizational characteristic to be discussed in this section is a measure termed level of admission to the graduate program. The variable has been operationally defined as the proportion of students who applied to the graduate program in the school or department of education for the academic year of 1963-64 that were accepted. The median case determined the dichotomies, a closed level of admission (20-76 percent) and an open level of admission (77-98 percent).

Although this measure has been termed in some reports (119, p. 267; 121, p. 14) as a measure of selectivity of the schools that represent the recruitment of talent, in this report neither the term nor the measure has this interpretation. Rationale for such an assessment is three-fold.

First, since the emphasis of this study is on the production of researchers as measured operationally by the number of doctoral recipients who immediately enter positions where much of their professional time is devoted to research, then any measure for a level of selectivity should be applicable only for the doctoral program. The measure obtained from the data of the institutional survey is for the total graduate program of the institution.

Although additional data, such as the doctoral students' scores from the GRE or the MAT, may be found to correlate well with this measure for admission to the graduate program, at this time it cannot be assumed that the correlation exists. Thus, it seems that further information is needed to define the "quality" of an applicant in order to define percent of rejection to either a graduate or a doctoral program as a measure of selectivity.

Thirdly, since the emphasis of this study is the training in research provided for doctoral students in graduate institutions of education, it cannot be assumed at this time that those individuals who are admitted to the total graduate program provide, in fact, a measure of the "quality" for those individuals who actually complete the requirements of the program for the doctorate in education and have conferred upon them either the Ed.D. or the Ph.D. in education.

Thus, the variable is termed a level of admission to the graduate program. It represents a measure based on the first questionnaire item addressed to the deans of graduate institutions of education: Please provide the following figures for new graduate students in education for the academic year of 1963-64.

____ Applied for admission to graduate school

____ Accepted for admission

____ Actually registered

According to this internal characteristic of the organization, level of admission to the graduate program, and 14 other organizational variables, significance for production of researchers by graduate institutions of education occurs.

According to the environmental variable, type of legal control, and the level of admission, there is significance for production of researchers. Table 3.24 presents the data for the mean number for production.

TABLE 3.24.--Mean number for production of researchers by graduate institutions according to the level of admission to the graduate program and type of legal control of the institution.

Type of Legal Control	Level of Admission Closed (20-76%)	Open (77-98%)
Public	1.53 (17)	0.65 (17)
Private	3.33 (9)	0.20 (10)

The direction of the results is more favorable for institutions that have a closed level of admission; and the mean number for production is slightly larger for private institutions than for the graduate institutions of public universities.

Another category of social structure is the size of the social unit. This measure has been determined as the proportion of doctoral degrees awarded in the academic year of 1962-1963 by the university that represented the doctorate in education. Again, the median case determined the dichotomies: small social unit (0-17%) and large (18+%). The variable implies that if a small social unit exists in the university, the major emphasis for doctoral training in the university may be considered something other than for the doctorate in education. The implication is that the graduate faculty and graduate student body in the school or department of education are proportionately smaller than the graduate faculty and graduate student body in the departments of arts and sciences.

As shown in Table 3.25, again it appears that departments of education with a closed level of admission and with a small social unit seem to have a higher production for researchers.

TABLE 3.25.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and the size of the social unit.

	Level of Admission	
Size of the Social Unit	Closed (20-76%)	Open (77-98%)
Small (0-17%)	3.31 (16)	0.33 (9)
Large (18+%)	0.30 (10)	0.56 (18)

Although the H-value for production (7.74) is not significant at the .05 level, according to the level of admission and the size of the doctoral program, the direction of results is again more favorable for schools with a closed level of admission. And it is in schools with a large number of registered doctoral students that a slightly higher mean number for production occurs: 2.64 (17) for institutions with a closed level of admission and a large doctoral program and 1.25 (8) for the institutions with a closed level and a small program.

Two organizational variables considered important in creating a research environment for the institution are the proportion of graduate faculty doing research and the range of research topics on which research is being conducted. According to the level of admission and these two research characteristics of the graduate institution of education, production for researchers is significant. Under both conditions of the research characteristics, the mean number for production is higher for schools with a closed level of admission and a high "volume" of research activity.

TABLE 3.26.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and two research characteristics of the organization.*

	Level of Admission	
Research Characteristics	Closed (20-76%)	Open (77-98%)
1. Range of Research Topics on Which Research is Being Conducted outside any Research Organization:		
High (9-25)	4.40 (10)	0.36 (14)
Low (0-8)	0.36 (11)	0.64 (11)
2. Proportion of the Graduate Faculty Doing Research:		
High (37-100%)	3.00 (13)	0.62 (13)
Low (0-36%)	0.38 (8)	0.40 (10)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

Another research characteristic of the institution is a measure for the number of formal arrangements for research between the graduate institution of education and other academic departments and professional schools within the university. Of the 74 institutions on which there are data for this measure, 36 institutions have no type of formal arrangements and 38 have between one and four types of formal arrangements for research. Although the computed value of H (7.60) is not significant at the .05 level, the direction of the results is again more favorable for institutions with a closed level of admission and a high rank on the research index of interdisciplinary relations.

The data presented in Table 3.27 show the mean number for production according to the conditions, level of admission to the graduate program and the primary responsibility of the graduate faculty in education. The measure is determined by the dean's estimate of the judgment of three groups in the school or department of education: the ranking of research compared to teaching and field service as the primary task of the graduate faculty. The three groups whose judgment the dean estimated were the department chairmen, the faculty members in education, and himself. Sixty-eight percent of the 71 deans, providing information on the item, stated that no one in the three groups estimated research as the primary activity of the faculty.

TABLE 3.27.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the gradate program and the primary responsibility of the graduate faculty in the school or department of education.

Primary Responsibility of the Graduate Faculty: Research*	Level of Admission	
	Closed (20-76%)	Open (77-98%)
High (1-3)	3.15 (13)	0.60 (5)
Low (0)	1.17 (12)	0.48 (21)

*The measure is determined by the dean's estimate of the judgment of three groups in the graduate institution of education.

The data imply that, where at least one group in the graduate institution may visualize research as the primary responsibility of the faculty and where the level of admission to the graduate program is a closed one, the production for researchers is more favorable.

Another attitude concerning organizational goals deals with the hiring preference for possible openings in graduate institutions of education. Two measures for the item on hiring preference are (1) for professors who mostly have done research and (2) for professors who have been trained outside a school of education. The former measure includes professors trained in a school of education as well as outside a school of education. The latter measure includes professors who have mostly taught in a related field or have mostly done research in a related field.

Of the 71 deans responding to the item, 34 state at least six of the possible eleven openings are to represent a preference for research; 37 state a preference for research for only one to five possible openings. According to the level of admission and this measure on hiring preference, significance for production of researchers occurs.

When hiring preference is determined by the measure, professors trained outside a school of education, 34 of the deans see at least three of the possible 11 openings to be according to this measure. Again, significance occurs according to this type of hiring preference and the level of admission to the graduate program.

Table 3.28 (page 94) presents the data according to the two sets of conditions.

Directions of results are once again more favorable for institutions with a closed level of admission and a high preference for professors who mostly have done research and for professors trained outside a school of education. The evidence for the data may be

TABLE 3.28.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and hiring preferences for possible openings in the graduate institution.

Hiring Preferences	Level of Admission Closed (20-76%)	 Open (77-98%)
1. Professors who mostly have done research:		
High (6-11)	3.62 (13)	0.25 (8)
Low (0-5)	0.69 (13)	0.56 (16)
2. Professors who have been trained outside a school of education:		
High (3-11)	4.09 (11)	0.50 (12)
Low (0-2)	0.73 (15)	0.42 (12)

supported by recalling that the mean number for production is slightly larger for institutions with a closed level of admission and a high proportion of the graduate faculty doing research (Table 3.26). Another piece of evidence for providing insight into the issue on hiring preference is the input variable, proportion of the graduate faculty who received most of their training for their highest degree outside any school of education. Significance does not occur according to the level of admission and this input variable. However, in schools with a closed level of admission and a high proportion of interdisciplinarily trained faculty, the mean number for production is larger: 2.90 (10) as contrasted with 1.85 (13) for schools with a closed level and a low proportion of interdisciplinarily trained faculty.

According to the level of admission and level of agreement on three factors considered by the dean as hindrances to the advancement of educational research, significance occurs. The factors are: (1) intellectual ability of people doing research in education; (2) lack of interest in educational research on the part of behavioral scientists outside schools of education; and (3) lack of interest in research on the part of administrators of schools or departments of education.

More deans in schools with an open level of admission than in schools of a closed level of admission visualize that intellectual ability is either a major or minor hindrance to the advancement of educational research: 42 percent (31) vs. 32 percent (28). However, more deans from schools with a closed level of admission assess the other two items to be a major or a minor hindrance. Seventy-four percent of the 28 deans representing schools with a closed level visualize the lack of interest in educational research on the part of behavioral scientists as a hindrance; only 54 percent of the 31 deans from the schools of an open level of admission regard this factor as a hindrance. A difference of 12 percent exists between the responses for the item, lack of interest in research on the part of administrators is a hindrance. The direction is higher for deans of schools with a closed level of admission: 64 percent (28) as contrasted to 52 percent of the 31 deans representing schools with an open level of admission. (Table E.5 of Appendix E gives comparisons of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the institutional characteristic, the level of admission to the graduate program.) Table 3.29 presents the mean number for production according to level of admission and the level of agreement on these factors of hindrances.

TABLE 3.29.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and level of agreement on hindrances to the advancement of educational research held by deans of graduate institutions of education.*

Hindrances to the Advancement of Educational Research	Level of Admission	
	Closed (20-76%)	Open (77-98%)
1. Intellectual ability of people doing research in education:		
Yes	3.67 (9)	0.42 (12)
No	1.47 (15)	0.53 (15)
2. Lack of interest in educational research on the part of behavioral scientists outside schools of education:		
Yes	2.62 (13)	0.40 (20)
No	1.91 (11)	0.71 (7)
3. Lack of interest in research on the part of administrators of schools or departments of education:		
Yes	3.00 (15)	0.38 (16)
No	1.11 (9)	0.64 (11)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

Although two-thirds of the deans in schools with a closed level of admission do not feel the intellectual ability of people doing research is a hindrance, these schools have a smaller mean number for production than the schools where deans see the factor as a hindrance. One possible explanation is that the deans who consider the factor a hindrance may expect even higher standards and requirements on research calibre in their own institutions. This explanation may be supported by the following evidence. Of the eight institutions which represent a closed level of admission and are mentioned in the index of research quality, five have deans who state the factor as a hindrance to the advancement of educational research. Of the four institutions which represent an open level of admission and are mentioned on the index of research quality, only two have deans who state the item as a hindrance.

According to an index of research quality and level of admission, production of researchers is significant. Again, the direction of results is more favorable in the schools with a closed level of admission and a mention on the index.

TABLE 3.30.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and an index of research quality.

	Level of Admission	
Index of Research Quality	Closed (20-76%)	Open (77-98%)
Mentioned	6.00 (8)	0.50 (4)
Not Mentioned	0.44 (18)	0.48 (23)

By far more deans in graduate institutions of education that have a closed level of admission state that the two types of doctorate differ. Table 3.31 shows that almost three-quarters of these deans agree that the Ph.D. should be a research degree and the Ed.D. should be a professional degree.

TABLE 3.31.--Proportion of deans according to the level of admission to the graduate program and the extent of agreement with the item, the Ph.D. and the Ed.D. should be specialized degrees.

"The Ph.D. should be a research degree and the Ed.D. should be a professional degree."	Level of Admission Closed (20-76%)	 Open (77-98%)
Strongly agree	14%) 71%	0%) 47%
Mostly agree	57)	47)
Undecided	4	10
Mostly disagree	21	33
Strongly disagree	4	10
	100%	100%
	(28)	(30)

According to the type of doctorate administered and the level of admission to the graduate program, significance for the production of researchers does occur.

TABLE 3.32.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and the type of doctorate in education administered by the institution.

Type of Doctorate in Education Administered	Level of Admission Closed (20-76%)	 Open (77-98%)
Only the Ph.D.	4.00 (4)	0.75 (4)
Only the Ed.D.	0.50 (6)	1.00 (7)
Both the Ph.D. and the Ed.D.	2.31 (16)	0.19 (16)

The direction of the results is more favorable for the schools that have a closed level of admission; and slightly more favorable in the institutions that administer only the Ph.D.

TABLE 3.33.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and the graduate preparation emphasized by the school or department of education.

	Level of Admission	
Graduate Preparation Emphasized	Closed (20-76%)	Open (77-98%)
Research (alone plus others)	3.80 (5)	0.83 (6)
Non-research	1.76 (21)	0.38 (21)

The direction of the results' being more favorable for institutions with a closed level of admission may be supported by some previous findings. More of these institutions have a higher proportion of the graduate faculty doing research and represent a high research index of interdisciplinary relations. Graduate students involved in an environment with a relatively high emphasis on research activity and with a preparation for research may be more influenced to undertake careers in research.

Although significance is not found for production of researchers according to the existence of a research organization and the level of admission, the H-value of 7.33 is relatively near the .05 level. And the direction of the results is more favorable for institutions with a research organization and a closed level of admission. According to the institutional setting for obtaining data for the dissertation, the mean number for production is larger for the institutions with a closed level of admission and "inside research units" as the institutional setting used by doctoral students to obtain data for the dissertation. Table 3.34 presents the data.

TABLE 3.34.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and the institutional setting for obtaining data for the dissertation.

Institutional Setting for Obtaining Data	Level of Admission	
	Closed (20-76%)	Open (77-98%)
Inside Research Units	4.33 (9)	0.33 (9)
Outside Research Units	0.82 (11)	0.70 (10)

A research environment afforded by research units, in general, may influence potential commitment to research by the graduate student. The direction of the results shown in Table 3.34 indicates the relevancy of encouraging doctoral students to use the institutional resources provided by research units.

One of the key issues in the study is examining production of researchers as associated with types of programs for training researchers. Data shown in Table 3.35 are in the direction of the results' being more favorable when institutions do have some type of a training program.

TABLE 3.35.--Mean number for production of researchers by graduate institutions of education according to the level of admission to the graduate program and the type of training program provided by the institution.*

Type of Training Program	Level of Admission	
	Closed (20-76%)	Open (77-98%)
Special	2.86 (7)	0.00 (3)
Part of the regular degree program	2.62 (8)	0.60 (5)
None	1.86 (7)	0.56 (16)

*The H-Test was not performed according to these two variables because one of the k samples had too few cases.

One interesting notation of the data in Table 3.35 is the similar mean number for production according to the two types of training programs in institutions with a closed level of admission. Now that additional funds for training in research are available, perhaps the institutional output of future researchers will be increased according to a special program for training in research.

In summary, data for production of researchers presented in the first part of this section have indicated the relative importance of the internal characteristic of the organization, the level of admission to the graduate program. Significance occurs for production of researchers by graduate institutions of education according to the level of admission and 14 other institutional variables. They include, among others, the proportion of graduate faculty doing research, the range of research topics on which research is being conducted, an index of research quality, the primary responsibility of the graduate faculty is research, and the type of doctorate in education administered by the institution. The direction of the results based on the mean number for production of researchers indicates a more favorable situation for graduate institutions of education that have a closed level of admission to the graduate program.

The next set of institutional variables on which significance for production occurs is concerned with the size of the social unit. Size has been operationally defined two ways.

The first definition deals with the size of the school or department of education as related to the total university. It is determined really by the output measure, proportion of doctoral degrees awarded by the university that represent the doctorate in education. As stated in the first part of this section, a small social unit in the university implies that the major emphasis for doctoral training in the university is primarily for doctoral students outside the school of education. The implication is that the graduate faculty in education and the graduate student body in the school or department of education are proportionately smaller than the graduate faculty and graduate student body in the departments of arts and sciences.

The second definition is determined by the number of registered doctoral students for the academic year of 1963-64. The median case determines the dichotomy, small (0-83) and large (84+). An implication of having a large doctoral program is that more sub-fields in education are offered by the institution. With more diversity of interests and of sub-fields in education, perhaps more facilities and training for research are evident. Thus, the research environment may be more conducive for production of researchers by graduate institutions of education.

According to the first definition of the size of the social unit and five other institutional variables, significance for production of researchers occurs. According to the size of the doctoral program and 10 other organizational characteristics, significance occurs.

Recall that data for production provide significance according to the level of admission to the graduate program and the size of the social unit (Table 3.25).

According to the environmental characteristic of a research index of interdisciplinary relations and the size of the social unit, significance occurs. Also, the institutional characteristics, the proportion of the graduate faculty doing research and the size of the social unit, yield significance. Table 3.36 presents the data according to these two research characteristics.

TABLE 3.36.--Mean number for production of researchers by graduate institutions of education according to the size of the social unit and two research characteristics of the organization.*

	Size of the Social Unit	
Research Characteristics	Small (0-17%)	Large (18+%)
1. Research Index of Interdisciplinary Relations:		
High (1-4)	2.57 (21)	0.72 (18)
Low (0)	0.20 (10)	0.54 (13)
2. Proportion of the Graduate Faculty Doing Research:		
High (37-100%)	3.17 (12)	0.38 (13)
Low (0-36%)	0.36 (11)	0.69 (13)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are excluded from the computations.

The direction of results is more favorable for graduate institutions that are small units within the total university. And, according to the two research characteristics, the mean number is higher in institutions with a high research index of interdisciplinary relations and a high proportion of graduate faculty doing research. One possible explanation for the results is the influence of a larger graduate faculty in arts and sciences whose primary interest may be research.

If this be the case, then these institutions that are a small social unit may pool more research resources through such means as the research-interdisciplinary relations. A finding that may substantiate this implication is that 85 percent of the 13 institutions mentioned on an index of research quality represent a small social unit. Only 41 percent of institutions not mentioned on the index have a small social unit.

Table 3.37 presents data on production according to size of social unit and an index of research quality.

TABLE 3.37.--Mean number for production of researchers by graduate institutions of education according to the size of the social unit and an index of research quality.*

	Size of the Social Unit	
Index of Research Quality	Small (0-17%)	Large (18+%)
Mentioned	4.54 (11)	0.00 (2)
Not Mentioned	0.30 (20)	0.69 (29)

*The H-Test was not performed because one of the k samples had too few cases.

According to the institutional setting for obtaining data for the dissertation and the size of the social unit, significance occurs. Although the H-Test was not performed according to the size of the social unit and the type of training program because of too few cases in one of the k samples, data are presented in Table 3.38. Direction of results according to both of these activities is more favorable in institutions that are small units of the university.

TABLE 3.38.--Mean number for production of researchers by graduate institutions of education according to the size of the social unit and two activities for training in research provided by the institution.*

Activities for Training in Research	Size of the Social Unit Small (0-17%)	Large (18+%)
1. Institutional setting for obtaining data for the dissertation:		
Inside Research Units	4.00 (10)	0.25 (8)
Outside Research Units	0.67 (12)	0.79 (14)
2. Type of Training Program:**		
Special	2.38 (8)	0.33 (3)
Part of regular degree program	2.00 (11)	0.60 (5)
None	1.30 (10)	0.65 (17)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

**The H-Test was not performed according to these two variables because one of the k samples had too few cases.

Based on the two definitions for size of the social unit, the direction of results for production of researchers should be more favorable in institutions that have a large doctoral program but are a small unit of the university to which they belong. Data in Table 3.39 indicate significance for production according to these conditions.

Size of the doctoral program and an output measure, termed production rate, provide significance for production of researchers. Production rate has been operationally defined as the proportion of the registered doctoral students in 1963-1964 that received the doctorate

TABLE 3.39.--Mean number for production of researchers by graduate institutions of education according to the size of the doctoral program and the size of the social unit.

	Size of the Doctoral Program	
Size of the Social Unit	Large (84+)	Small (0-83)
Small (0-17%)	2.75 (16)	0.84 (13)
Large (18+%)	0.65 (17)	0.25 (12)

in education in 1962-63. Again it is assumed that the larger doctoral programs with a large production rate have a larger mean number for production of researchers. Data shown in Table 3.40 support the assumption.

TABLE 3.40.--Mean number for production of researchers by graduate institutions of education according to the size of the doctoral program and the production rate of doctoral recipients by the graduate institutions of education.

	Size of the Doctoral Program	
Production Rate	Large (84+)	Small (0-83)
Large (14+%)	2.72 (18)	0.69 (16)
Small (0-13%)	0.88 (16)	0.40 (10)

There are two limitations, however, for interpreting the variable, production rate. First, there is lack of data to state that the production rate in 1962-63 represents a typical or an atypical year. Secondly, there are no data available at this time to hold constant the length of time spent in the doctoral program. In other words, the institutions represented with a small production rate may have programs in which doctoral students do not complete the program in a shorter time. One implication of the results in Table 3.40 is, the larger the doctoral program and the larger the production rate, the more available are the doctoral recipients for any job opportunities in research.

Proportionately more institutions with a large doctoral program have a high proportion of the graduate faculty doing research. According to the two variables, significance for production occurs. Also, significance is found according to the size of the doctoral program and the proportion of funds by the university plus the school of education research sources for financing research projects conducted outside any research unit. Although proportionately more schools with a small doctoral program have a higher proportion of their research projects financed from the sources within the university, they do not have a higher mean number for production of researchers. Data for production according to these research characteristics and the size of the doctoral program appear in Table 3.41 (page 108).

Proportionately more deans of schools with a large doctoral program state that the primary task of the graduate faculty is research. Significance occurs according to the two variables in Table 3.42 (page 108).

The direction of the results for production is more favorable for schools with a large doctoral program and a dean who states that the primary responsibility of the graduate faculty is research. The finding is further supported by this fact. According to the institutions providing data for both variables, of the 11 institutions with a high rating both for the proportion of graduate faculty doing research and for research as the first task of the graduate faculty, only two schools have a small doctoral program.

TABLE 3.41.--Mean number for production of researchers by graduate institutions of education according to the size of the doctoral program and two research characteristics of the organization.*

Research Characteristics	Size of the Doctoral Program	
	Large (84+)	Small (0-83)
1. Financing Projects Performed outside any Research Organizations by the Source, Within the University:		
High (11-100%)	3.86 (7)	0.18 (11)
Low (0-10%)	1.18 (17)	0.56 (9)
2. Proportion of the Graduate Faculty Doing Research:		
High (37-100%)	2.67 (15)	0.30 (10)
Low (0-36%)	0.67 (9)	0.31 (13)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are excluded from the computations.

TABLE 3.42.--Mean number for production of researchers by graduate institutions of education according to the size of the doctoral program and the primary responsibility of the graduate faculty in the school or department of education.

Primary Responsibility of the Graduate Faculty: Research*	Size of the Doctoral Program	
	Large (84+)	Small (0-83)
High (1-3)	2.62 (13)	1.43 (7)
Low (0)	1.47 (19)	0.26 (19)

*The measure is determined by the dean's estimate of the judgment of three groups in the graduate institutions of education.

Significance for production, also, appears according to this measure for size of the social unit and the level of agreement by deans on two hindrances to the advancement of educational research; namely, (1) the types of services and studies desired by school systems and (2) low standards for acceptance of research articles in journals.

TABLE 3.43.--Mean number for production of researchers by graduate institutions of education according to the size of the doctoral program and level of agreement by deans on two hindrances to the advancement of educational research.

Hindrances to the Advancement of Educational Research	Size of the Doctoral Program	
	Large (84+)	Small (0-83)
1. Types of services and studies desired by school systems:		
Yes	1.68 (25)	0.43 (14)
No	2.86 (7)	0.75 (12)
2. Low standards for acceptance of research articles in journals:		
Yes	0.80 (15)	0.50 (10)
No	2.94 (17)	0.65 (16)

About the same number of deans from schools with a large doctoral program claim that the factor of low standards is as well as is not a hindrance. The mean number for production, however, is larger for schools whose deans state the factor is not a hindrance.

Comparing just the schools with large doctoral programs according to two institutional variables that yield a relatively high production of researchers may provide some insights into the results shown in part 2 of Table 3.43. Proportionately more schools whose deans state the factor as no hindrance have (1) a closed level of admission to the graduate program and (2) a high proportion of graduate faculty doing research. Of the institutions with large doctoral programs and deans stating "no" to the hindrance, 69 percent (16) have a closed level of admission and 79 percent (13) have a high proportion of the graduate faculty doing research. However, for the institutions with large doctoral programs and deans stating "yes" to the hindrance, only 38 percent (13) represent a closed level of admission and 70 percent (10) have a high proportion of the graduate faculty doing research.

According to the size of the doctoral program and the type of graduate preparation emphasized in the institution, production of researchers is significant.

Table 3.44.--Mean number for production of researchers by graduate institutions of education according to the size of the doctoral program and the type of graduate preparation emphasized by the institution.

	Size of the Doctoral Program	
Type of Preparation Emphasized	Large (84+)	Small (0-83)
Research (alone plus others)	1.88 (8)	1.67 (6)
Non-research	1.60 (25)	0.25 (20)

The direction of the results is more favorable for institutions with a large doctoral program, no matter if the preparation for research is or is not emphasized.

Data supporting the comparability of the mean number for production by institutions with a large doctoral program, no matter what type of graduate preparation is emphasized, are the following. Six of the eight institutions that emphasize the preparation for research are mentioned on an index of research quality; seven have a program for training in research. For institutions that do not emphasize the graduate preparation for research and that provide information for the following variables, these data lend support for production of researchers being rather similar: slightly over half have a closed level of admission to the graduate program; almost two-thirds (64 percent) of the 22 institutions have a training program; 74 percent of the schools have a high proportion of the graduate faculty doing research; and finally, six of the institutions are mentioned on an index of research quality. In conclusion, it seems that, if other institutional characteristics considered relatively important for production are present in schools with large doctoral programs, not stressing the graduate preparation for research is counterbalanced.

The similarity of the mean number for production by institutions with a small doctoral program and on a graduate preparation for research emphasized may be explained according to additional characteristics of the institutions. For example, of the six institutions, three have a training program; two belong to the Top 22 universities; and one of the two, which has a large number for production of researchers, is mentioned on an index of research quality.

Production of researchers is significant according to the size of the doctoral program and two institutional characteristics for training in research. The first institutional variable is the proportion of graduate faculty that supervise dissertations representing areas of their own research interests. The second variable is the proportion of graduate courses in education devoted to research courses. Data shown in Table 3.45 indicate the direction of the mean number for production is more favorable, again, for institutions with large doctoral programs.

TABLE 3.45.--Mean number for production of researchers by graduate institutions of education according to the size of the doctoral program and two institutional characteristics for training in research provided in the institutions.*

Characteristics for Training in Research	Size of the Doctoral Program Large (84+)	 Small (0-83)
1. Level of Faculty Supervision: proportion of faculty that supervise dissertations that are in areas of their own research interests.		
High (40-100%)	1.58 (12)	0.25 (8)
Low (0-39%)	2.75 (8)	0.12 (8)
2. Courses: proportion of graduate courses in education devoted to research courses:		
High (7-24%)	2.13 (15)	0.42 (12)
Low (1-6%)	1.63 (19)	0.73 (15)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

Because of too few cases in one of the k samples, the H-Test was not performed according to size of the doctoral program and the type of training program. Data are still presented because the institutional program for training in research is considered an important issue in the report.

TABLE 3.46.--Mean number for production of researchers by graduate institutions of education according to the size of the doctoral program and the type of training program provided by the institution.*

	Size of the Doctoral Program	
Type of Training Program	Large (84+)	Small (0-83)
Special	3.11 (9)	0.00 (2)
Part of the regular degree program	1.67 (9)	1.43 (7)
None	1.54 (11)	0.38 (16)

*The H-Test was not performed according to these two variables because one of the k samples had too few cases.

The direction of results is still more favorable for institutions with a large doctoral program.

Explanation for the similarity of the mean number for production by institutions with a large doctoral program and no training program is based on other institutional characteristics in these schools. For example, all but two have a high proportion of graduate faculty doing research. Three of the institutions are mentioned on an index of research quality.

According to some institutional characteristics, there are differences between large and small programs. These differences may affect not only the research activities of the schools but also the types of students who apply and are accepted to the graduate program. Finally, these differences may provide insight into the more favorable direction of results for production of researchers by large doctoral programs. Compared with graduate institutions of education with small doctoral programs, proportionately more graduate institutions of education with large doctoral programs:

(1) are in universities classified as the Top 22 on a scale of university reputation;

(2) have a closed level of admission to the graduate program;

(3) do not have a formal entrance requirement for admission to the graduate program;

(4) have a high rating on research as the primary responsibility of graduate faculty research: based on the dean's estimate of the judgment of the 10 groups within and outside the university as well as the three groups within the department or school of education;

(5) have a high proportion of the funds for financing research projects being conducted outside any research unit from governmental sources;

(6) have a high proportion of the graduate faculty doing research;

(7) are mentioned on the index of research quality;

(8) have a high level of apprenticeships on research projects being conducted outside any research organization; and

(9) have a program for training in research.

In summary, data for production of researchers presented in the latter part of this section have indicated the relative importance of the social structure, size of the social unit. Two definitions of size of the social unit are given: (1) the proportion of doctoral degrees awarded by the university in 1962-63 that represented the doctorate in education and (2) the number of registered doctoral students in 1963-64. According to the first definition for size of the social unit and five other institutional variables, significance for production of researchers occurs. They include proportion of the graduate faculty doing research, a research index of interdisciplinary relations, level of admission to the graduate program, institutional setting for obtaining data for the dissertation, and size of the doctoral program.

According to the size of the doctoral program and 10 other organizational variables, significance for production of researchers by graduate institutions of education occurs. They include, among others, production rate by the graduate institution of education, the proportion of the graduate faculty doing research, the primary responsibility of the graduate faculty, the type of graduate preparation emphasized in the school or department of education, and level of agreement on two items considered hindrances to the advancement of educational research.

According to both variables for the size of the social unit, direction of the results for the mean number for production is more favorable where the graduate institution of education is a small social unit within the university and has a large doctoral program within its own organization.

The third section of chapter three examines the production of researchers according to two attitudes; namely, two perceptions of organizational characteristics. The two characteristics are a hindrance to the advancement of educational research and an index of research quality.

3. Production of Researchers According to Two Perceptions of Organizational Characteristics Held by Deans of Graduate Institutions of Education

The first attitude to be discussed in this section is a hindrance to the advancement of educational research; namely low standards for acceptance of research articles in journals.* As stated previously in part one of this section, journals represent an established procedure for publishing research studies. Thus, the quality of research articles and the standards for accepting research studies come under the scrutiny of all involved in the venture of educational research. However, it is assumed that this item on hindrances to the advancement of educational research will not be checked by deans in institutions that provide the larger mean number for production of researchers. This does not imply that these deans are not concerned with the standards for acceptance of research articles. Rather it implies that they may represent institutions that may be highly involved in research activities and rather well represented by research publications in journals. Also, it is assumed that proportionately more of these deans represent institutions that have certain organizational characteristics relatively important for production of researchers. Thus, these deans may not visualize this hindrance to the advancement of educational research to be as important as other hindrances.

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*In Appendix E this attitude as well as twelve other opinions on educational issues and hindrances to the advancement of educational research perceived by deans are examined according to twenty institutional variables.

According to the level of agreement on this item and 12 other institutional variables, significance for production of researchers occurs. Recall that significance for production of researchers occurs, according to this hindrance and (1) a scale of university reputation (Table 3.17) and (2) the size of the doctoral program (Table 3.43).

Proportionately more deans in institutions with a high index of interdisciplinary relations between the school of education and other academic departments or professional schools visualize that low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research. However, the mean number for production is larger for institutions with a high index of interdisciplinary relations and with their deans stating "no" to this item. Data for the two variables that yield significance for production of researchers are presented in Table 3.47.

TABLE 3.47.--Mean number for production of researchers by graduate institutions of education according to the level of agreement on a hindrance to the advancement of educational research, low standards for acceptance of research articles in journals, and an index of interdisciplinary relations.

Index of Interdisciplinary Relations	Hindrance to the Advancement of Educational Research	
	Yes	No
High (7-16)	1.00 (17)	3.38 (16)
Low (0-6)	0.64 (11)	0.71 (21)

Explanations are given for the mean number for production being higher in institutions that have a high index of interdisciplinary relations and have deans that disagree with the item's being a hindrance. The comparison is according to the level of agreement by deans of only institutions that have a high index of interdisciplinary relations. Data of the comparisons are on two organizational variables considered relatively important for explaining production of researchers: the level of admission to the graduate program and an index of research quality. Proportionately more of the institutions where deans say "no" to the item have a closed level of admission: 71 percent (14) vs. 41 percent (12). Proportionately more are mentioned on the index of research quality than the institutions where the deans agree to the hindrance: 53 percent (17) vs. 33 percent (18).

According to the level of agreement on this hindrance and two other attitudes about organizational values and norms, significance for production occurs. Data in Table 3.48 show again that the higher mean number for production is by institutions that have a high rating on the two research characteristics of the institution and have their deans disagreeing with the claim of hindrance (see page 119).

Again, there is comparison of only the institutions that are high on the research rating of the primary task of the graduate faculty. Proportionately more deans who do not claim this item to be a hindrance represent institutions that have a closed level of admission: 100 percent (10) vs. 50 percent (8). Also, proportionately less of the deans who say "yes" to the hindrance represent institutions that are mentioned on the index of research quality: 20 percent (10) vs. 45 percent (11).

TABLE 3.48.--Mean number for production of researchers by graduate institutions of education according to the level of agreement by deans on a hindrance to the advancement of educational research, low standards for acceptance of research articles in journals, and two perceptions of organizational characteristics held by deans.

Perceptions of Organizational Characteristics	Hindrance to the Advancement of Educational Research	
	Yes	No
1. Primary Responsibility of the Graduate Faculty is Research (based on dean's estimate of the judgment of three groups in the school...of education):		
High (1-3)	0.44 (9)	3.64 (11)
Low (0)	1.12 (17)	1.12 (26)
2. Hiring Preference: Professors Who Mostly have Done Research:		
High (6-11)	1.21 (14)	3.13 (15)
Low (0-5)	0.46 (11)	1.00 (22)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

Comparisons of the institutions that are high on the rating for the hiring preference of professors who mostly have done research show differences do exist between the institutions according to the level of agreement by the deans on the hindrance. Based on the institutions that provide the data for the variables, proportionately more of the institutions where the deans disagree with the item:

(1) have a closed level of admission: 67 percent (15) _vs._ 50 percent (10);

(2) have a high proportion of the graduate faculty doing research:

54 percent (13) *vs.* 44 percent (9); and

(3) are mentioned on an index of research quality: 41 percent (17) *vs.* 27 percent (15).

Significance occurs for production according to the level of agreement on this item about low standards and the level of agreement by deans on two other factors considered hindrances to the advancement of educational research; namely, types of services and studies desired by school systems and lack of interest in research on the part of administrators of schools or departments of education. Table 3.49 shows the mean number for production according to these sets of institutional variables.

TABLE 3.49.--Mean number for production of researchers by graduate institutions of education according to the level of agreement by deans on two factors considered hindrances to the advancement of educational research and the level of agreement on low standards for acceptance of research articles in journals are a hindrance.

Hindrance to the Advancement of Educational Research		Hindrance to the Advancement of Educational Research:	
		Low Standards...	
		Yes	No
1. Types of services and studies desired by school systems:			
	Yes	0.46 (22)	2.30 (20)
	No	2.33 (6)	1.38 (17)
2. Lack of interest in research on the part of administrators of schools or departments of education:			
	Yes	0.37 (19)	2.83 (18)
	No	1.89 (9)	0.95 (19)

Comparison on two institutional characteristics according to the level of agreement by deans to the two sets of hindrances shown in Table 3.49 will demonstrate institutional differences. In turn, these differences lend support for the different mean number for production of researchers by each group of graduate institutions of education.

The first comparisons deal with the two hindrances, low standards for acceptance of research articles in journals and types of services and studies desired by school systems. Proportionately more of the institutions whose deans agree with the hindrance about the types of services desired by school systems but disagree with the item on low standards have a closed level of admission and are mentioned on the index of research quality.

TABLE 3.50a.--Proportion of institutions that have a closed level of admission to the graduate program according to the level of agreement by deans on two hindrances to the advancement of educational research.

Hindrance...	Hindrance...	
Types of services and studies desired by school systems.	Low standards for acceptance of research articles in journals.	
	Yes	No
Yes	28% (18)	67% (21)
No	* (5)	27% (14)

*Too few cases for percentaging. However, 4 of the 5 do have a closed level of admission.

As shown in Table 3.49, 1., two of the mean number for production are very comparable. And a proportionately comparable number of institutions mentioned on an index of research quality exists in the two institutional settings.

TABLE 3.50b.--Proportion of institutions that are mentioned on an index of research quality according to the level of agreement by deans on two hindrances to the advancement of educational research.

Hindrance... Types of services and studies desired by school systems.	Hindrance... Low standards for acceptance of research articles in journals.	
	Yes	No
Yes	17% (23)	30% (23)
No	29% (7)	16% (19)

As shown in Table 3.50b., deans who either agree or disagree with both hindrances represent institutions that have a relatively small proportion of institutions mentioned on an index of research quality.

The second comparisons deal with the two hindrances, low standards for acceptance of research articles in journals and lack of interest in research on the part of administrators of schools or departments of education. Again, proportionately more of the institutions in which deans agree with the hindrance about the lack of interest on the part of administrators but disagree on the hindrance of the low standards have a closed level of admission. Also, proportionately more of these same deans represent institutions that are mentioned on an index of research quality. Tables 3.51a and 3.51b give the data.

TABLE 3.51a.--Proportion of institutions that have a closed level of admission to the graduate program according to the level of agreement by deans on two hindrances to the advancement of educational research.

Hindrance...	Hindrance...	
Lack of interest in research on the part of administrators in Schools...of education.	Low standards for acceptance of research articles in journals.	
	Yes	No
Yes	38% (16)	67% (18)
No	43% (7)	39% (18)

TABLE 3.51b.--Proportion of institutions that are mentioned on an index of research quality according to the level of agreement by deans on two hindrances to the advancement of educational research.

Hindrance...	Hindrance...	
Lack of interest in research on the part of administrators in schools...of education.	Low standards for acceptance of research articles in journals.	
	Yes	No
Yes	15% (20)	40% (20)
No	30% (10)	9% (23)

As shown in both Tables 3.50a, b and 3.51 a, b, consistently the institutions that are proportionately higher on the two characteristics relatively important for production of researchers have deans that disagree with the hindrance, low standards for acceptance of research articles in journals; and yet they agree on another hindrance to the advancement of educational research. Such data lend support for the assumptions concerning this perception of organizational values that are presented at the onset of this section.

Significance for production of researchers occurs according to level of agreement by deans on the hindrance and three research activities in the institution; namely, (1) the range of research topics on which research is being conducted outside research organization, (2) the type of program for training in research, and (3) the institutional setting for obtaining data for the dissertation. Again, according to all three sets of data, the direction of the results for production is more favorable for institutions that rate high on the level of research activity and have deans who disagree with the hindrance. (See Table 3.52, page 125).

Comparisons for only the institutions that rate high on the range of research topics according to the level of agreement by deans on the hindrance show some institutional differences. Based on the institutions that provide data for the following variables, proportionately more of the institutions whose deans claim the item is not a hindrance:

(1) have a closed level of admission to the graduate program: 54 percent (13) vs. 27 percent (11);

TABLE 3.52.--Mean number for the production of researchers by graduate institutions of education according to the level of agreement by deans on a hindrance to the advancement of educational research, low standards for acceptance of research articles in journals, and three research activities in the institution.*

Research Activities	Hindrance to the Advancement of Educational Research	
	Yes	No
1. Range of Research Topics on Which Research is Being Conducted outside any Research Organization:		
High (9-25)	0.77 (13)	3.12 (17)
Low (0-8)	0.69 (13)	0.56 (16)
2. Training Provisions:		
(a) Type of Training Program:**		
Special	1.43 (7)	4.20 (5)
Part of the regular degree program	0.33 (9)	3.38 (8)
None	0.60 (10)	1.05 (19)
(b) Institutional Setting for Obtaining Data for the Dissertation:		
Inside research units	0.33 (9)	4.36 (11)
Outside research units	0.44 (9)	0.88 (17)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

**Significance also occurs according to the 2 x 2 design: existence of a program (yes vs. no) and the level of agreement on the hindrance.

(2) have a high proportion of the graduate faculty doing research: 77 percent (13) *vs.* 50 percent (10; and

(3) are mentioned on an index of research quality: 47 percent (15) *vs.* 27 percent (11).

The above findings lend support for the mean number for production being larger in institutions that have a high range of research topics and whose deans claim that low standards for acceptance of research articles in journals are not a hindrance to the advancement of educational research.

Proportionately more deans of institutions providing training programs feel that low standards for acceptance of research articles in journals is a hindrance. However, the mean number for production is larger for those institutions with a training program and whose deans do not support the claim of hindrance. Comparisons of institutions with a training program show differences on three organizational characteristics according to the level of agreement on the item. Based on the institutions providing the information for the following variables, proportionately more of the institutions with deans who disagree:

(1) have a closed level of admission to the graduate program: 82 percent (11) *vs.* 50 percent (14);

(2) are mentioned on an index of research quality: 53 percent (15) *vs.* 18 percent (17); and

(3) have a high proportion of the graduate faculty doing research: 60 percent (10) *vs.* 46 percent (13).

These data again lend support for the mean number for production being larger in the institutions with a training program and deans who disagree that the item is a hindrance.

The findings reported on the level of agreement on this type of hindrance lend support to the assumption entertained earlier in the section; namely, deans who disagree that low standards for acceptance of research articles in journals are a hindrance tend slightly more to represent institutions that have organizational characteristics considered relatively important for production of researchers. For example, proportionately more of these deans represent institutions with these three characteristics: a closed level of admission to the graduate program; a mention on an index of research quality; and a high proportion of the graduate faculty doing research. The deans who disagree that this item is a hindrance tend slightly more to agree that these two factors are hindrances to the advancement of educational research; namely, the lack of interest in research on the part of administrators in graduate institutions of education and the types of services and studies desired by school systems.

In summary, according to the level of agreement by deans that low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research and 12 other organizational variables, significant results occur. The direction of the more favorable results for production is provided by institutions that have a cluster of variables reflecting a high level of research activity and that have their deans' disagreeing to this type of hindrance.

The final major attitude to be presented in the section is an opinion held by deans and research coordinators of graduate institutions of education. The questionnaire item addressed to these respondents is: "Which graduate schools or departments of education in the nation are doing what you consider to be the most competent and worthwhile research?" If an institution received at least one mention by the respondents, the graduate institution of education is noted as being mentioned on an index of research quality. In all, 21 institutions represent the category, mentioned on an index of research quality.[3]

In Table E.10 of Appendix E, comparison is given of responses on thirteen attitudinal items held by deans of graduate institutions of education according to an index of research quality of the institution. Some differences do exist between the deans' responses according to this institutional characteristic. Proportionately more of the deans of institutions mentioned on the index agree with the opinion, the Ph.D. should be a research degree and the Ed.D. should be a professional degree. However, fewer disagree with the attitude, the Ph.D. generally has higher prestige than the Ed.D.

Proportionately more of the deans of the institutions mentioned on the index claim that the following factors are hindrances to the advancement of educational research: (1) intellectual ability of people doing research in education and (2) lack of interest in research on the part of administrators of schools or departments of education. Slightly more, also, see the lack of interest in educational research on the part of behavioral scientists outside schools or departments of education as a hindrance. And proportionately more of these deans claim the hindrances to be major hindrances than do the deans of institutions not mentioned on an index of research quality. Perhaps one explanation for the latter finding is that the institutions represented on the index are involved more in the venture of educational research. Thus, the deans reflect proportionately any hindrance to the intensity and frequency of research involvement by the institution as a major hindrance. Finally, proportionately more of these deans prefer to hire, for any possible opening in the graduate institution of education, professors who mostly have done research.

Of all the institutional variables on which the H-Test has been performed, this perception of an organizational characteristic provides, according to frequency of occurrence, more significant conditions for production of researchers by graduate institutions of education. According to an index of research quality and 22 other institutional variables, significance occurs.

To substantiate further the relative importance of this variable concerning production of researchers, it is noted that almost two-thirds (63 percent) of the 108 doctoral recipients who met the criterion for the institutional measure for production came from these institutions mentioned on the index of research quality. More specifically, the descriptive statistics for production of researchers by graduate institutions of education according to this index of research quality are the following.

(1) Based on the institutional survey, data for production of researchers are available from 73 institutions of education. Data from the questionnaire survey of the 1964 doctoral recipients in education

provide 108 subjects that met the criterion for the operational definition of production of researchers by graduate institutions of education.

(2) Sixteen of the 73 institutions are mentioned on an index of research quality. Three have no doctoral recipients to meet the definition for production of researchers; 13 of the 16 provide between one and nine doctoral recipients for a total of 68 subjects for the institutional measure.

(3) The remaining 37 percent of the 108 subjects came from 57 institutions. Thirty-two schools provide no doctoral recipients for the institutional measure. The remaining 25 graduate schools or departments of education provide between one and four subjects for a total of 40 doctoral recipients.

Data presented in the tables of the chapter represent the conditions under which significance occurs for production of researchers, when production has been defined by the number of doctoral recipients. However, in footnote four of the chapter, there are tables presenting the mean proportion for production of researchers by only institutions mentioned on an index of research quality. The tables represent the same institutional conditions for which tables presented in the body of the text are given.

Rationale for presenting these additional tables is two-fold. First, the direction of the more favorable condition for production of researchers does shift in some cases according to the comparison between the mean number for production and the mean proportion for production.* Secondly, with this particular institutional variable being rather important for interpreting the phenomenon of production of researchers, a presentation of the production based on the proportion by each school may provide additional information on the topic.

Attention is now turned to the conditions under which significance for production occurs. Recall that significance occurs according to an index of research quality and a social structure of the organization, level of admission to the graduate program (Table 3.30).

According to the index and the type of legal control, results for production of researchers are significant. Direction of results is only slightly more favorable for publicly controlled universities to which the school of education belongs. Recall that similar results occurred according to a scale of university reputation and the type of legal control (Table 3.14).

Significance also occurs according to this index and an input characteristic of the organization termed an index of interdisciplinarily trained faculty. The difference between the mean number for production by institutions mentioned on the index is rather small. However, the key issue of this input characteristic of the organization is not the proportion of graduate faculty that represent such an index. Rather emphasis is on what primary function this type of professor serves in the graduate institution; namely as specialists in the subject-matter areas or as specialists in research in education. (Recall the discussion of this topic in section one; significance occurs for this variable of an interdisciplinarily trained faculty and a scale of university reputation, Table 3.14.)

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*For example, in Table 3.53, according to the mean number for production, the more favorable conditions for institutions mentioned on the index is in institutions with a low index of interdisciplinarily trained faculty. However, according to the mean proportion for production, data in Table 3.69 show that the more favorable condition for institutions mentioned on the index is in institutions with a high index of interdisciplinarily trained faculty.

Data for production of researchers according to the above two sets of conditions are given in Table 3.53.

TABLE 3.53.--Mean number for production of researchers by graduate institutions of education according to an index of research quality of the institution and environmental and input characteristics of the institution.*

Environmental and Input Characteristics	Index of Research Quality	
1. Type of Legal Control:	Mentioned	Not Mentioned
Public	4.44 (9)	0.78 (37)
Private	3.86 (7)	0.55 (20)
2. Index of an Interdisciplinarily Trained Faculty:		
High (9-85%)	3.71 (7)	0.79 (24)
Low (0-8%)	5.25 (4)	0.36 (22)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

Significance occurs according to an index of research quality and three perceptions of organizational goals; namely, the measures: (1) primary responsibility of the graduate faculty is research, determined by the dean's estimate of the judgment both for the ten groups inside and outside the university and for only the three groups within the graduate institution of education; and (2) the preference to hire professors trained outside a school of education.

Comparisons of the institutions that are mentioned on an index of research quality show some differences on other organizational characteristics present in the institutional settings, according to the estimate of research as the primary responsibility of the graduate faculty (for both measures). For example, slightly more of the institutions whose deans have a high estimate on research as the primary task have a closed level of admission, a high proportion of the doctoral students working for the Ph.D., and a high index of interdisciplinarily trained faculty. However, no matter if the estimate is high or low, a comparable number of the institutions has a training program and a high research index of interdisciplinary relations. Data shown in parts one and two of Table 3.54 indicate the comparable mean numbers for production by institutions mentioned on the index, no matter if the estimate on research as the primary task of the faculty is high or low.

Institutions that are mentioned on the index and rank high on the prefernce to hire professors trained outside a school of education have a slightly higher mean production. Since these institutions already are well represented by this type of faculty, perhaps there is a desire to continue such recruitment.

Table 3.54 gives the mean number for production according to the two sets of conditions described above.

TABLE 3.54.--Mean number for production of researchers by graduate institutions of education according to an index of research quality of the institution and emphasis on research as perceived by the dean.*

	Index of Research Quality	
Emphasis on Research	Mentioned	Not Mentioned
1. Primary Responsibility of the Graduate Faculty is Research (based on dean's estimate of the judgment of 10 groups inside and outside the university):		
High (3-10)	4.33 (9)	0.37 (19)
Low (0-2)	4.80 (5)	0.71 (31)
2. Primary responsibility of the Graduate Faculty is Research (based on dean's estimate of the judgment of three groups in the school...of education):		
High (1-3)	4.75 (8)	0.46 (13)
Low (0)	4.17 (6)	0.62 (37)
3. Hiring Preference: Professors Trained outside a School of Education:		
High (3-11)	5.44 (9)	0.57 (21)
Low (0-2)	3.25 (4)	0.60 (30)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

The next set of variables concerns the opinions about issues and problems of educational research; namely, the specialization of the two types of doctorates in education and some hindrances to the advancement of educational research. Significance occurs according to an index of research quality and the level of agreement by deans on the specialization of the two degrees and six factors claimed to be hindrances (see Table 3.55, page 136).

The direction of results for production is consistently more favorable for institutions mentioned for an index of research quality. Comparability of the mean number for production exists for these institutions, no matter whether the deans agree or disagree to the following factors being a hindrance to the advancement of educational research: (1) intellectual ability of people doing research in education, (2) lack of interest in research on the part of administrators of schools or departments of education, and (3) lack of recognition and rewards for research accomplishments.

Slight differences in the mean number for production by the institutions mentioned on the index do occur according to the level of agreement on four opinions held by deans. The direction of the results is slightly more favorable in three situations and very favorable in one situation for institutions whose deans disagree with the opinion. Two of the items are to be discussed.

The first opinion to be discussed is the specialization of the two degrees; namely, the Ph.D. should be a research degree and the Ed.D. should be a professional degree. This attitude has created much debate. It is difficult to discern all measures of the meanings that the two types of doctorate in education may elicit. There is an examination of the opinion held by deans according to the proportion

TABLE 3.55.--Mean number for production of researchers by graduate institutions of education according to an index of research quality of the institution and level of agreement by deans on general opinions and problems of educational research.*

General Opinions and Problems of Educational Research		Index of Research Quality	
		Mentioned	Not Mentioned
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree:	Agree	3.78 (9)	0.62 (29)
	Disagree	5.80 (5)	0.59 (17)
2. Hindrances to the Advancement of Educational Research:			
(a) Intellectual ability of people doing research in education:	Yes	4.33 (9)	0.73 (22)
	No	4.00 (6)	0.50 (28)
(b) Types of services and studies desired by school systems:	Yes	3.64 (11)	0.52 (31)
	No	5.75 (4)	0.72 (19)
(c) Lack of interest in educational research on the part of behavioral scientists outside schools of education:	Yes	3.90 (10)	0.60 (30)
	No	4.80 (5)	0.60 (20)
(d) Lack of interest in research on the part of administrators of schools or departments of education:	Yes	4.18 (11)	0.46 (26)
	No	4.25 (4)	0.75 (24)
(e) Low standards for acceptance of research articles in journals:	Yes	1.50 (6)	0.68 (22)
	No	6.00 (9)	0.54 (28)
(f) Lack of recognition and rewards for research accomplishment:	Yes	4.40 (5)	0.47 (17)
	No	4.10 (10)	0.67 (33)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computation.

of doctoral students working for the Ph.D. in each type of degree-administering situation. The data given in Table 3.56 (page 138) may shed some insight into the debate.

The strongest agreement with the item is by deans, not from schools that administer only the Ph.D., but from institutions that administer both degrees and have a high proportion of the doctoral students working for the Ph.D. Are differences (real or unreal) between the two types of doctorate in education stressed more (felt more) in institutions with a high proportion of the doctoral students working for the Ph.D.? Are efforts to distinguish between the two types of degrees more evident in these institutions? If so, what procedures are used to create the differences?

Disagreement to the item by 34 percent of the deans in schools administering only the Ph.D. and by 47 percent of the deans in schools administering only the Ed.D. raises two questions. Do these deans represent institutions that may be entertaining the idea of initiating a new program for the doctorate in education? Do these deans perhaps visualize that the research standards and competencies for a doctorate in education are the same, no matter if the degree be an Ed.D. or a Ph.D. in education?

According to the level of agreement on the item, the mean number for production by institutions only mentioned on the index is slightly larger for institutions whose deans disagree with the item.*

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*According to the mean proportion for production by the institutions mentioned on the index, the direction of the results shifts (Table 3.70). The larger mean proportion for production occurs in institutions whose deans agree with the item. However, there is still comparability of the mean proportion for production by the institutions, whether the deans agree or disagree with the opinion.

TABLE 3.56.--Proportion of deans in schools of education according to the proportion of doctoral students who are working for the Ph.D. and the extent of agreement or disagreement with the item, the Ph.D. and the Ed.D. should be specialized degrees.

			Proportion of Doctoral Students Working for the Ph.D.					
			Both degrees administered					
"The Ph.D. should be a research degree and the Ed.D. should be a professional degree."	Ph.D. only 100%		High (32-99%)		Low (1-31%)		Ed.D. only (0%)	
Strongly agree	17%)	67%	14%)	78%	13%)	46%	6%)	53%
Mostly agree	50)		64)		33)		47)	
Mostly disagree	17		21		47		41	
Strongly disagree	17		0		7		6	
	101%		99%		100%		100%	
Number of schools:	(12)		(14)		(15)		(17)	

Four of the five deans who disagree with the opinion represent institutions with a low proportion of doctoral students working for the Ph.D. Eight of the nine deans who agree with the item represent institutions with a high proportion of doctoral students working for the Ph.D.

Since there is a shift in the direction of the data according to the use of a proportion to define production (Table 3.70), it seems more applicable to state here that the direction of slightly more favorable results is with institutions whose deans do agree with the item. However, the similarity of the two mean proportions for production certainly implies the need for further research on the real or unreal distinction between the two types of doctorate in education. Clarity of the issues surrounding the debate may assist in the recruiting and the training of graduate students who desire to pursue a career in research.

The second item to be discussed from Table 3.55 concerns a hindrance to the advancement of educational research: low standards for the acceptance of research articles in journals. The more favorable condition for production is in institutions mentioned on the index and whose deans disagree with item's being a hindrance. Five of the nine deans disagreeing with the item provide information on the proportion of the graduate faculty doing research; all represent institutions with a high proportion. More of the institutions whose deans agree with the hindrance have an open level of admission. As stated in the first part of this section, institutions whose deans disagree with the hindrance tend to have certain institutional characteristics considered relatively important for production of researchers.

The next table presents data concerning an organizational goal and two administrative activities; namely, the type of graduate preparation emphasized in the school or department of education; the formal entrance requirements for admission to the graduate program; and the type of doctorate in education administered. According to these institutional variables and an index of research quality, significance for production of researchers occurs. Table 3.57 (page 141) presents the mean number for production according to the three sets of conditions.

Again, the institutions with a mention on the index provide the larger mean number for production. Also, there is for each set of conditions a similarity of the mean number for production by these institutions, no matter what the rating on the organizational goal or administrative activity is.

The reader is referred to Table 3.71 which presents the mean proportion for production of researchers by the institutions mentioned on the index according to the same organizational goals and administrativo activities listed in Table 3.57. Again, the direction of the results changes when production is defined as a proportion. The larger mean proportion is for those institutions where (1) no formal entrance requirement for admission exists; (2) only the Ph.D. is administered; (3) the proportion of doctoral students working for the Ph.D. is high; and (4) the type of graduate preparation emphasized is research (alone plus others).

Although the direction of results changes, the comparability of the mean proportion by these institutions, no matter what the

TABLE 3.57.--Mean number for production of researchers by graduate institutions of education according to an index of research quality of the institution and some organizational goals and administrative activities.*

Organizational Goals and Administrative Activities	Index of Research Quality	
	Mentioned	Not Mentioned
1. Formal Entrance Requirements for Admission to the Graduate Program:		
(a) Version 1: None	3.89 (9)	0.67 (27)
At least one	4.60 (5)	0.52 (25)
(b) Version 2: Teaching Certifidate Required:		
No	3.89 (9)	0.74 (34)
Yes	4.60 (5)	0.33 (18)
2. Type of Doctorate in Education Administered:**		
(a) Version 1: Ph.D. only	4.25 (4)	0.43 (7)
Ed.D. only	No cases	0.88 (16)
Both the Ph.D. and the Ed.D.	4.17 (12)	0.68 (34)
(b) Version 2: Proportion of Doctoral Students Working for the Ph.D. (for all three degree-administering situations):		
High (25-100%)	3.50 (10)	0.33 (21)
Low (0-24%)	5.75 (4)	0.64 (28)
3. Type of Graduate Preparation Emphasized: Research (alone plus others)	3.12 (8)	0.62 (8)
Non-research	5.00 (6)	0.58 (43)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

**Significance also occurs for the condition: type of doctorate in education administered (Ph.D. only x Ed.D. only) and an index of research quality.

rating on the other institutional variables is, suggests that, in these particular graduate institutions of education, production of researchers may not at this time be that strongly differentiated by the different types of organizational goal and administrative activities that are operationally defined in the study.

Significant results occur according to this index of research quality and course offerings provided by the institution; namely, (1) the proportion of graduate education courses that are research courses, (2) the proportion of research courses that have research entrance requirements (research prerequisites or permission of the instructor), and (3) required interdisciplinary courses (see Table 3.58, page 143).

Again, the mean numbers are comparable for institutions mentioned on the index according to the two ratings for each type of course offerings.* The slightly higher mean number by institutions that rank high on the required interdisciplinary courses may imply some advantages of graduate students' having contact with academic departments outside a school of education. In other words, contact with the academic departments, where the primary purpose of their graduate preparation may be for research, may help to intensify a commitment to research on the part of the graduate student in education. The latter point may be supported by the following observation. In chapter five which presents production of researchers by research organization, the organizational variable, having in the research unit

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*Direction of the results according to the mean proportion for production by the institutions mentioned on the index is the same (Table 3.72).

TABLE 3.58.--Mean number for production of researchers by graduate institutions of education according to an index of research quality of the institution and course offerings provided by the graduate institution.*

Courses	Index of Research Quality Mentioned	 Not Mentioned
1. Proportion of graduate education courses that are research courses:		
High (7-24%)	3.62 (8)	0.76 (25)
Low (1-6%)	4.75 (8)	0.65 (32)
2. Proportion of research courses that have research entrance requirements:		
High (36-96%)	4.00 (12)	0.56 (25)
Low (0-35%)	4.75 (4)	0.81 (32)
3. Required interdisciplinary courses: number of departments offering courses outside the institution of education that students in education are required to take:		
High (2+)	4.00 (6)	0.60 (25)
Low (0-1)	2.75 (4)	0.62 (21)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computation.

graduate students from academic departments outside the school of education, is relatively important in explaining the production of researchers by these research units. (The topic, taking graduate courses outside the school of education, is also explored in chapter six.)

Although the H-Test was not performed according to an index of research quality and three activities for obtaining experiences in research, Table 3.59 (page 145) presents data on the mean number for production for the three sets of conditions; namely, an index of research quality with level of apprenticeships, institutional setting for obtaining data for the dissertation, and a program for training in research.

The comparability of production of researchers by the institutions mentioned on the index is again noted for the different classifications within each organizational activity.

When the data in Table 3.59 are compared to the results (Table 3.72) for the mean proportion for production by the institutions mentioned on the index, some changes occur in direction of the slightly more favorable conditions for production. The most striking change of direction is with the institutional variable, type of training program. Based on the mean proportion for production, institutions with the training program as a part of the regular degree program have the largest value. As stated in the overview of this chapter, it may not be surprising that this type of training program in graduate institutions is more prevalent and represents the condition most favorable for production of researchers. Since the special programs may be relatively new as an institutional characteristic, the impact of such programs on production of researchers may not be fully realized as yet.

TABLE 3.59.--Mean number for production of researchers by graduate institutions of education according to an index of research quality of the institution and three activities for obtaining experiences in research.*

	Index of Research Quality	
Activities**	Mentioned	Not Mentioned
1. Level of Apprenticeships on Projects outside any Research Organization:		
High (.9-88%)	4.00 (5)	0.47 (19)
Low (0-.8%)	6.00 (2)	0.35 (17)
2. Institutional Setting for Obtaining Data for the Dissertation:		
Inside research units	5.22 (9)	0.36 (11)
Outside research units	1.50 (2)	0.71 (28)
3. Program for Training in Research:		
Version 1: Type of training program:		
Special	4.43 (7)	0.88 (8)
Part of the regular degree program	4.80 (5)	0.69 (13)
None	3.67 (3)	0.62 (29)
Version 2: Existence of a training program:		
Yes (special plus part of the regular degree program)	4.58 (12)	0.76 (21)
No	3.67 (3)	0.62 (29)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

**The H-test was not performed because one of the k samples in each set of conditions had too few cases.

In summary, data for production of researchers according to an index of research quality and other institutional variables strongly indicate the relative importance of the variable, an index of research quality. According to 22 sets of conditions, significance for production occurs with this organizational characteristic. The other variables which represent the 22 sets include, among others, type of legal control, level of admission to the graduate program, an index of an interdisciplinarily trained faculty, primary responsibility of the graduate faculty is research, level of agreement by deans on certain hindrances to the advancement of educational research, type of doctorate in education administered by the institution, formal entrance requirements for admission to the graduate program, and proportion of graduate education courses devoted to research methods.

This organizational variable is considered relatively important for providing insights into the issues of the development of professional personnel in educational research for two reasons. First, according to the frequency of occurrence for providing significance for production, it ranks first (Table 3.13). Secondly, those 16 institutions that are mentioned on the index have 63 percent of the 108 subjects used to define in this report the term, production of researchers. The remaining 57 institutions not mentioned on the index have only 40 subjects that met the criterion for production of researchers by graduate institutions of education.

Additional tables on the production of researchers by only the institutions mentioned on an index of research quality are presented in footnote four of this chapter. This procedure is done for two reasons.

First, as stated in the preceding paragraph, these schools at the time of this study did provide predominantly more 1964 doctoral recipients who immediately entered positions where 50 to 100 percent of their professional time was devoted to research. Thus, a closer examination of the production of researchers by these institutions according to their rating (high or low) on the other institutional variables may differentiate more specifically the direction of more favorable results for production.

Secondly, the production of researchers by these 16 institutions represents in the additional tables the mean proportion, not the mean number. This procedure is done to see if directions of results for the more favorable condition change, when compared to the direction of results according to the mean number for production. The more favorable condition is determined by which dichotomy (or trichotomy) of an institutional variable has the larger mean number or mean proportion for production of researchers.

A brief resume is given of other organizational characteristics that describe the institutions mentioned on an index of research quality. Of those institutions providing the institutional data: only one of the 14 has a small doctoral program; 11 of the 14 have a large production rate; 11 of the 16 graduate institutions of education belong to universities classified as the Top 22 on a scale of university reputation. Nine are publicly controlled. Almost two-thirds (63 percent) of the institutions have a high index of interdisciplinarily trained faculty; and 78 percent have a high proportion of the graduate faculty doing research.

All but four of the 12 have a closed level of admission to the graduate program. Nine have no formal entrance requirements for admission to the graduate program. Slightly over one-half have research as the primary graduate preparation. Seventy-one percent (14) of the institutions represent a high proportion of the doctoral students working for the Ph.D. Seven out of ten institutions have a high level of apprenticeships on projects being conducted outside any research unit. Finally, 80 percent (15) of the institutions have a program for training in research.

According to the additional tables based on the mean proportion for production by the 16 institutions mentioned on an index of research quality, directions of results for the more favorable conditions for production do change in some cases. However, the change is only slight. In fact, one of the striking observations of the data is, in general, the comparability of the mean proportions for production by these 16 institutions, no matter what rating they may have on the dichotomy (or trichotomy) of the other institutional variables.

According to the organizational variables listed in the additional tables in footnote four of the chapter, nine represent conditions in which the two categories of each variable yield a percent difference of five or more on the mean production of researchers. The following eight conditions do yield such differences: (1) belonging to universities classified on a scale of university reputation as the Top 22; (2) having a closed level of admission; (3) administering only the Ph.D.; (4) having a high number of departments outside the school of education that offer courses required of graduate students in education: (5) having the program for research training as a part of the regular degree program; (6) having an institutional setting for obtaining data for the dissertation to be inside research units; (7) having deans rank on the preference to hire for possible openings in the school professors trained outside a school of education; (8) having deans who do not consider low standards for acceptance of research articles in journals a hindrance to the advancement of educational research; and (9) having a small social unit. The mean proportions for production for the remaining categories of each institutional variable listed in the tables are strikingly similar.

The next section of the chapter deals with production of researchers according to some institutional goals and activities for research; namely, (1) the type of graduate preparation emphasized in the institution of education, (2) proportion of doctoral students working for the Ph.D. (for all three degree-administering situations), (3) course offerings by the institution, (4) institutional setting for obtaining data for the dissertation, (5) apprenticehips on projects, and (6) programs for training in research.

4. Production of Researchers According to Institutional Goals and Activities for Research by Graduate Institutions of Education

For the most part, the variables presented in this section have received attention in the previous sections on the presentation of results. Thus, the major purpose of the section is to synthesize the discussion on the goals and activities for training in research that are provided by the institution. These institutional characteristics are considered relatively important issues in the discussion of the development of professional personnel in educational research.

The first organizational variable to be discussed is the institutional goal, type of graduate preparation emphasized in the institution. As noted in the overview, only 24 percent of the graduate institutions emphasize either research alone or research plus other forms of preparation. The remaining institutions emphasize preparation for teaching or administration in either public schools, colleges, or both. Thus, relatively few graduate institutions of education have the graduate preparation for research as an institutional goal.

According to the type of graduate preparation emphasized and only four other institutional characteristics, significance for production of researchers occurs. The organizational variables are, level of admission to the graduate program, size of the doctoral program, an index of research quality and the existence of a research organization. affiliated with the graduate institution of education.

Tables and discussion on the first three organizational variables have appeared previously: type of graduate preparation emphasized

(1) with the level of admission (Table 3.33); (2) with the size of the doctoral program (Table 3.44); and (3) with an index of research quality (Tables 3.57 and 3.71). The direction of the results for the more favorable conditions for production is with institutions, emphasizing the preparation for research, that have a closed level of admission, have a large doctoral program and are mentioned on an index of research quality.

According to the variables, type of graduate preparation emphasized and the existence of a research organization, again, the direction of the more favorable condition for production is with institutions that emphasize research and have at least one research organization. In fact, having research organizations may have some influence for production of researchers in institutions that do not emphasize the preparation for research.

TABLE 3.60.--Mean number for production of researchers by graduate institutions of education according to the type of graduate preparation emphasized and the existence of a research organization in the school or department of education.

	Type of Graduate Preparation Emphasized	
Existence of a Research Organization	Research (along plus others)	Non-Research
Yes	2.80 (10)	1.23 (31)
No	0.33 (6)	0.94 (18)

Although the H-Test was not performed, data are given for the mean number for production according to the type of preparation emphasized and the existence of a training program. As noted in the review, only 19 percent of the institutions emphasize the preparation for research and provide a program for training in research. Almost half (47 percent) neither emphasize the preparation for research nor provide any type of training program. Furthermore, five percent emphasize research but have no program for training in research, and 30 percent have some type of training program but do not emphasize the preparation for research. (Data are presented in Table 3.5.)

Table 3.61 presents data for the mean number for production according to these two institutional variables.

TABLE 3.61.--Mean number for production of researchers by graduate institutions of education according to the type of graduate preparation emphasized and the existence of a training program.*

	Type of Graduate Preparation Emphasized	
Existence of a Training Program	Research (alone plus others)	Non-research
Yes (special plus part of the regular degree program)	2.46 (11)	1.44 (18)
No	0.67 (3)	0.92 (25)

*The H-Test was not performed because one of the k samples had too few cases.

Again, the more favorable condition for production is in institutions with a training program and the graduate preparation for research. And the impact of having a training program is evident in institutions that do not emphasize graduate preparation for research.

In summary, the variable, the type of graduate preparation emphasized, appears with four institutional variables that are considered relatively important for explaining the production of researchers; namely, the level of admission, the size of the doctoral program, an index of research quality, and the existence of a research organization. The mean number for production is consistently higher in the institutions that emphasize the preparation for research and have a research unit, a closed level of admission, a large doctoral program, and a mention on the index. It is noted, however, that the next large mean number is not in institutions that emphasize research and have the opposite rating of the dichotomy for the other four institutional variables. Rather the next large mean number is in institutions that do not emphasize the preparation for research but do have a research unit, a closed level of admission, a large doctoral program and are mentioned on the index. One possible explanation for the trend of results is that institutions have not as yet developed or invested sufficiently the institutional resources needed to differentiate between graduate preparation for research or non-research as related to the production of researchers. A second explanation is that only with other institutional variables considered important for production of researchers will the impact of emphasizing the preparation for research be felt.

The second organizational variable to be discussed is the proportion of doctoral students working for the Ph.D. for all three degree-administering situations. According to the institutional activity and three other institutional characteristics, production of researchers is significant. The three organizational variables are a scale of university reputation, an index of research quality and the proportion of the graduate faculty doing research. Tables and discussion of the first two variables have been presented previously: the proportion of the doctoral students working for the Ph.D. (1) with a scale of university reputation (Table 3.22); (2) with an index of research quality (Table 3.57).*

The more favorable situation for production, according to proportion of the graduate faculty doing research and the proportion of doctoral students working for the Ph.D., is in institutions with a high proportion of the graduate faculty doing research.

TABLE 3.62.--Mean number for production of researchers by graduate institutions of education according to the proportion of doctoral students working for the Ph.D. and the proportion of the graduate faculty doing research.

Proportion of the Graduate Faculty Doing Research	Proportion of Doctoral Students Working for the Ph.D. (for all three degree-administering situations)	
	High (25-100%)	Low (0-24%)
High (37-100%)	2.64 (11)	1.00 (14)
Low (0-36%)	0.25 (12)	0.73 (11)

As shown in Table 3.62, the mean number for production is similar for institutions with a high proportion of the graduate faculty doing research and with both a high and a low proportion of doctoral students working for the Ph.D. in education. Comparability of the mean numbers, again, implies that other institutional characteristics may have to be present in order for the institutional activity of the proportion of doctoral students working for the Ph.D. to be important for production.

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*Recall that, according to another version of this variable, type of degree administered by the institution (Ph.D. only vs. Ed.D. only vs. Both), significance for production occurs, also, (1) with level of admission to the graduate program (Table 3.32) and (2) with an index of research quality (Tables 3.57 and 3.71).

The fact that this institutional variable provides relatively few sets of significant conditions raises a question. Is the more salient inssue at this time one of what kind of degree is earned according to what kind of research environment exists in the institution? Or is the more salient issue one of what kinds of research experiences doctoral students have prior to the receipt of the degree, no matter what type of doctoral degree in education is earned? For example, it will be shown in chapter six that significant results do not occur for any of the patterns, according to the proportion of doctoral students working for the Ph.D. Furthermore, it will be shown that differences between the two types of doctoral recipients are relatively small on some patterns for potential commitment to research, according to certain favorable characteristics operationally defining research experiences.

In conclusion, it seems that other relatively important variables than just the proportion of doctoral students working for the

Ph.D. may be operating to affect the results for production of researchers by graduate institutions of education.

The third organizational characteristic is the course offerings provided by the institution; three versions of the variable relate to (1) the proportion of graduate education courses that represent research courses, (2) the proportion of research courses that have research entrance requirements, and (3) an index of required interdisciplinary courses. The last version is determined by the number of departments outside the school of education that offer courses required of graduate students in education.

According to the first version of course offerings and three other institutional variables, production of researchers is significant. The three organizational variables are a scale for university reputation, size of the doctoral program, and an index of research quality. Tables and discussion of these three sets of conditions have been presented previously: the proportion of graduate education courses devoted to research methods (1) with a scale of university reputation (Table 3.23); (2) with the size of the doctoral program (Table 3.45); and (3) with an index of research quality (Tables 3.58 and 3.72).

The results for each of the three above sets of conditions is as follows. The mean number for production is comparable for the institutions that have either a high or a low proportion of courses devoted to research methods, given a high rating on the category of the second institutional variable (for example, given a large doctoral program). An explanation for the trend of results is that providing a high level of research courses does not alone create a research environment of an institution. Only with other institutional characteristics that are important for production of researchers may research courses become a relatively important organizational variable.

A second version of course offerings, proportion of the research courses that have research entrance requirements, and two other institutional characteristics provide significant results for production of researchers. Tables and discussion have been presented previously: proportion of research courses that have research entrance requirements (1) with a scale of university reputation (Table 3.23) and (2) with an index of research quality (Table 3.58). Again, the similarity of the mean number for institutions with either a high or a low proportion of research entrance requirements, but a high rating on the other institutional variable, presents the same implication for the trend of results reached in the preceding paragraph.

According to an index of required interdisciplinary courses and three other organizational variables, significance occurs. The three are (1) an index of interdisciplinary relations between the school of education and other academic departments or professional schools outside the graduate institution of education, (2) the existence of a program for training in research, and (3) an index of research quality. Data and discussion for the latter institutional variable are presented in Table 3.58.

Data for production according to the variables, an index of required interdisciplinary courses and an index of interdisciplinary relations, are presented in Table 3.63.

TABLE 3.63.--Mean number for production of researchers by graduate institutions of education according to an index of required interdisciplinary courses and an index of interdisciplinary relations.

Index of Interdisciplinary Relations	Index of Required Interdisciplinary Courses*	
	High (2+)	Low (0-1)
High (7-16)	2.67 (15)	0.82 (11)
Low (0-6)	0.27 (15)	1.07 (14)

*Index is determined by the number of departments outside the school of education that offer courses required for graduate students in education.

The more favorable situation for production is in institutions that are high on both variables. The unexpected value for the mean number for production by institutions with a low rating on both institutional characteristics may be explained by the following facts. Some of the institutions belonging to this category do have other characteristics that have been shown to be relatively important for production of researchers. For example, of the institutions that provide information for the variables, almost half have a closed level of admission and a high research index of interdisciplinary relations. Over one-half have a high proportion of the graduate faculty doing research. Sixty-one percent (13) have a large doctoral program. And, finally, one of the institutions is mentioned on an index of research quality.

A comparable trend for results that appear in Table 3.63, also, occurs according to the institutional activities, an index of required interdisciplinary courses and the existence of a training program.

TABLE 3.64.--Mean number for production of researchers by graduate institutions of education according to the existence of a training program and an index of required interdisciplinary courses.

Index of Required Interdisciplinary Courses	Existence of a Training Program: Yes (special plus part of regular degree program	No
High (2+)	2.33 (12)	0.38 (13)
Low (0-1)	0.30 (10)	1.54 (13)

The mean value for production by the institutions with low ratings on both institutional variables may be explained by the following facts. Again, these institutions do have other characteristics that are relatively important for production. For example, of the institutions, providing information on the variables, 62 percent (12) have a large doctoral program. Three-fourths of the 12 institutions have a high proportion of the graduate faculty doing research. And, finally, three of these 13 institutions are mentioned on an index of research quality.

In summary for the discussion of the institutional activity, course offerings, the data strongly indicate that this activity alone cannot operate as a measure for production of researchers. In other words, other institutional variables that are considered important for production of researchers interplay with this activity to create situations favorable for production.

Only according to five other variables does significance occur for the variable, institutional setting for obtaining data for the dissertation. Four have already been presented and discussed in the text:

(1) a scale of university reputation (Table 3.23);

(2) level of admission to the graduate program (Table 3.34);

(3) size of the social unit (Table 3.38); and

(4) the attitude, low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research (Table 3.52).

According to the institutional setting for obtaining data and the attitude, primary responsibility of the graduate faculty is research, significance occurs. Table 3.65 gives the data.

TABLE 3.65.--Mean number for production of researchers by graduate institutions of education according to the institutional setting for obtaining data for the dissertation and the primary responsibility of the graduate faculty in the school or department of education.

	Institutional Setting for Obtaining Data	
Primary Responsibility of the Graduate Faculty is Research*	Inside research units	Outside research units
High (1-3)	5.00 (7)	0.86 (7)
Low (0)	1.23 (13)	0.71 (17)

*Measure is determined by the dean's estimate of the judgment of three groups in the school...of education.

As shown in Table 3.65, the direction of the results is more favorable in institutions with doctoral students obtaining data for the dissertation inside research units and with dean's perceiving at least one group within the graduate institution ranking research as the primary responsibility. Of the seven institutions in this group, six are mentioned on an index of research quality.

In summary, the trend for more favorable results for production is in institutions that already rank high on the institutional characteristics relatively important for production and that have their doctoral students, in gaining experiences in research, use the institutional resources available for research, such as research units.

Significance occurs for production of researchers according to the level of apprenticeships on projects being conducted outside any research unit and the proportion of graduate faculty who supervise dissertations in areas of their own research interests. With no other condition does the activity, level of apprenticeships, yield significance. Table 3.66 gives the mean number for production of researchers according to these conditions.

TABLE 3.66.--Mean number for production of researchers by graduate institutions of education according to the level of apprenticeships on projects being conducted outside any research unit and the level of faculty supervision.

	Level of Apprenticeships	
Level of Faculty Supervision	High (.9-88%)	Low (0-.8%)
High (40-100%)	1.50 (12)	0.00 (4)
Low (0-39%)	1.57 (7)	0.00 (7)

The operational definition for this variable is quite limited for two reasons. First, apprenticeships on projects are confined to only research projects being conducted outside any research organization. Secondly, the two questionnaire items on which the variable is based asked for the number of graduate students working with the projects and not exclusively for the number of doctoral students.

However, given these limitations of the variable, it is worth noting some differences between the institutions according to the level of apprenticeships. A comparable proportion of institutions with a low or a high level of apprenticeships have a high proportion of faculty doing research; a high proportion of faculty doing research is in 56 percent of the 23 institutions with a high level of apprenticeships and in 56 percent of the 16 institutions with a low level. If production of researchers is desired, at least one implication of the previously stated finding is that, no matter how actively engaged the faculty may be in conducting research projects, commitment by doctoral recipients to research can be developed in an institutional environment only where graduate students themselves are involved in the research projects being performed.

Of the institutions that have a high level of apprenticeships, even slightly less have a closed level of admission: 43 percent (21) _vs_. 53 percent (15). However, proportionately more have a research index of interdisciplinary relations: 60 percent (25) _vs_. 42 percent (19). And, whereby only four institutions of the 18 institutions with a low level of apprenticeships have a high rating for research as the primary responsibility of the graduate faculty, 40 percent (25) of the institutions with a high level of apprenticeships rank high on research as the primary task.

The data in the above paragraph imply the potential production of researchers by combining institutional characteristics favorable for production with a high level of apprenticeships on projects.

The second issue concerning the data in Table 3.66 deals with the level of faculty supervision, a measure operationally defined as the proportion of the graduate faculty who supervise dissertations that are in areas of their own research interests. The implication of such an institutional characteristic is that, with a deeper involvement by the faculty in supervising dissertations in areas of their own research interests, the more committed the doctoral student may become to future research activity.

Three explanations may account for the similarity of the mean number for production by institutions with a high level of apprenticeships but a different level of faculty supervision. First, one of the seven institutions, representing a low level of faculty supervision, has a high level for production of researchers and is mentioned on an index of research quality. Secondly, the interactions and consequences of interactions concerning the activities of writing a dissertation and supervising a dissertation are more complex activities than may be implied by the operational definition used for the variable of supervision of dissertations. A third explanation may be found in the very "nature" of research. That is to say, given predominantly a research environment, such as previously described for the institutions with a high level of apprenticeships, supervision of dissertations may cross many areas of the faculty's general research interests. If the third explanation be more applicable for interpreting the similarity of the mean number for production, then it may follow that the key issue is to develop a research environment that permits a high level of apprenticeships on projects.

The final institutional variable to be discussed in this section is the existence of a program for training in research. According to this institutional activity and four other organizational characteristics, production for researchers is significant. Three of the conditions have been presented and discussed previously. They are: existence of a training program (1) with a scale of university reputation (Table 3.23); (2) with the level of agreement by deans on the item, low standards for acceptance of research articles are a hindrance to the advancement of educational research (Table 3.52); and (3) with an index of required interdisciplinary courses (Table 3.64).

According to the existence of a program for training in research and the existence of a research organization, production of researchers is significant.

TABLE 3.67.--Mean number for production of researchers by graduate institutions of education according to the existence of a training program and the existence of a research organization in the school or department of education.

	Existence of a Training Program	
Existence of a Research Organization	Yes (special plus part of the regular degree program)	No
Yes	2.91 (22)	0.83 (18)
No	0.64 (11)	1.00 (14)

The direction of the more favorable results for production is in institutions that have at least one research organization affiliated with the graduate institution of education and have some type of training program. There are some institutional characteristics that differentiate institutions with research units that have and do not have a program for training in research. For example, of the institutions providing the data on the variables, proportionately more of the institutions with a training program: (1) have a closed level of admission (64 percent vs. 33 percent); (2) have a high research index of interdisciplinary relations (73 percent vs. 50 percent); and (3) are mentioned on an index of research quality (45 percent vs. 17 percent). Only slightly more of these institutions with a training program rank high on research as the primary responsibility of the graduate faculty (based on the dean's estimate of the judgment of the three groups within the graduate institution of education). However, proportionately less of the institutions with a training program: (1) have a high proportion of the graduate faculty doing research (44 percent vs. 56 percent) and (2) have a high level of apprenticeships on projects being conducted outside any research unit (50 percent vs. 65 percent).

According to the data cited above, having research organizations reflect other institutional characteristics favorable for production of researchers. However, having institutional characteristics relatively important for creating a research environment plus having a program for students to integrate the learning experiences in research lend support for the more favorable situation for production of researchers to be in institutions with research units and a training program.

The above point may be developed further. Although not significant at the .05 level, according to the existence of a training program and the range of research topics, the computed value of H, 7.61, is very near significance. And the direction of the results implies that a large range of research topics on which research is being conducted may permit (1) student-awareness of research activity by the institution and (2) student-involvement with the research projects. The latter point is supported by the fact that proportionately more of the institutions with a high range of research topics have a high level of apprenticeship than do institutions with a low range of research topics (76 percent *vs.* 38 percent). Table 3.68 presents the mean number for production according to a range of research topics and the existence of a training program.

TABLE 3.68.--Mean number for production of researchers by graduate institutions of education according to the existence of a training program in the institution and the range of research topics on which research is being conducted outside any research units.*

	Existence of a Training Program	
Range of Research Topics	Yes (special plus part of regular degree program)	No
High (9-25)	2.85 (20)	1.23 (13)
Low (0-8)	0.73 (11)	0.67 (18)

*With 3 d.f., the computed value of H, 7.61, however, is not significant at the .05 level.

Again, the direction of results implies that a high range of research topics coupled with a training program for students may strengthen the learning experiences in research and the potential commitment to pursue research upon the receipt of the doctorate.

By observing Matrix C-1 in Appendix C, the conditions under which significance for production of researchers defined as a full-time activity may be noted. When comparing the significant results according to the two operational definitions for production of researchers, one will note the similarity of the same conditions appearing with the variable, existence of a training program: namely, (1) a scale of university reputation; (2) an index of required interdisciplinary courses; and (3) the level of agreement by deans on a hindrance to the advancement of educational research: low standards for the acceptance of research articles in journals.

There are two exceptions. Significance for production defined as a full-time activity occurs according to the existence of a training program and the financing of research projects being performed outside any research unit by governmental sources; this does not hold for production defined as 50 to 100 percent of professional time devoted to research. (However, the computed value of H, 7.00, according to these conditions, is rather close to the .05 level. And the direction of the results is more favorable for production of researchers where institutions have a training program and a high level of research projects being financed by governmental sources.)

The second exception occurs for the variables, existence of a training program and existence of a research unit. According to the operational definition of production, 50 to 100 percent of the professional time devoted to research, significance occurs (Table 3.67). These conditions do not yield significance for production of researchers defined as a full-time activity.

The key issue, however, seems not to be what variables necessarily yield significance but why there seems to be so few institutional variables providing significance according to the existence of a training program in the institution. Rationale for the lack of significance occurring for many conditions is three-fold. First, some of the institutional variables based on the available data may still be too grossly defined to measure differences, if any. An example is the level of apprenticeships on projects. This measure is limited only to projects being conducted outside any research unit and to all graduate students rather than exclusively to doctoral students.

Secondly, rather than expecting the existence of a training program to yield differences according to many conditions, it may be more reasonable to assume only a very few and more salient conditions create differences. For example, it seems reasonable to expect differences on production according to a large volume of research activities in the institution and the presence of a training program as contrasted to a small volume and the absence of a training program. Considering a large volume of research activities to imply sustained involvement by the institution to a research commitment, one may expect the doctoral students in such an environment to be aware more of continuing this professional commitment to research. A large volume of research activities can be noted by such variables as : (1) a high proportion of graduate faculty doing research; (2) a high range of research topics on which research is being conducted outside any research unit; and (3) the existence of a research unit. A fourth activity, serving as an indicator for effectively competing in the market for research funds, is a high proportion of the financing of research projects being conducted outside any research unit by the government. According to each of the four activities and the existence of a training program, the highest production is by institutions with a program and a large "volume" of research activity.

The third reason for such a few sets of significant conditions may be an insufficient commitment of resources to the training program. In other words, the effects of a training program may be differentiated over a period of time only by the institution's providing sustained commitment of resources to the program.

The last part of this chapter deals with a brief summary of the findings reported in the previous sections.

D. Summary

The purpose of the summary is to present only a few highlights of the results presented in the text of chapter three. Rationale is three-fold. First, production of researchers by graduate institutions of education has been examined according to many external and internal characteristics of the organization. Secondly, after each major presentation of an institutional variable in the text, a brief summary of the findings and implications of the data has already been given. Thirdly, in the chapter on recommendations, statements concerning future considerations for the development of professional personnel in educational research will be documented according to the findings presented in this chapter and the following chapters.

Attention is now turned to some of the highlights of the results on production of researchers by graduate institutions of education.

Production has been operationally defined as the number of 1964 doctoral recipients who upon the receipt of the degree entered positions where 50 to 100 percent of the professional time was devoted to research.

A framework for examining production of researchers has been suggested to cover the following areas of concern: (1) the recruitment of and the acceptance of highly qualified students to the graduate program; (2) the type of research environment the graduate institution of education maintains and sustains; and (3) the formal and informal arrangements for students to obtain experiences in research, such as, courses in research methodologies, apprenticeships on projects, and programs for training in research. It is assumed that all the areas of concern are interrelated, although each context is treated separately. The data reported in this chapter reflect predominantly the attributes of the organization: the behavioral patterns of the socializer and the psychological, social, and cultural characteristics of the setting for socialization.

The thesis of the overview of the chapter is that, given the increased demands being placed upon research in education, the opportunities for obtaining experiences in research that are provided by graduate institutions of education seem to be relatively small. The thesis is supported by some of the following findings. A little less than one in ten graduate institutions administering the doctorate in education emphasize exclusively the graduate preparation for research; only 24 percent emphasize the graduate preparation for research alone plus research, teaching or administration. Less than one-fourth have a special program for persons who want to make research a career. And only 19 percent of the institutions have a combination of the organizational goal and activity for preparation for research; that is, the institutions both emphasize the graduate preparation for research (alone plus others) and provide some type of training program (special programs plus doctoral programs that are primarily concerned with training in research). Five out of ten institutions neither emphasize nor provide programs for preparation of researchers.

The thesis is further supported by the relatively small number of doctoral recipients that meet the criterion for the measure, production of researchers by graduate institutions. Based on the usable return-sample of 73 institutions from the institutional survey of deans of graduate institutions of education, data from the 1964 doctoral recipients in education provide only 108 individuals for the measure. Almost one-half of the institutions have no production of researchers. A little less than one-fourth of the institutions have between three and nine doctoral recipients who immediately entered positions where professional time devoted to research was between 50 and 100 percent. Sixty-three percent of the doctoral recipients that met the criterion for production of researchers represent 13 of the 73 graduate instituions of education.

If the definition for production of researchers is limited to only those individuals who immediately entered positions where research was the primary activity, then only one out of ten institutions have between three and six doctoral recipients that meet this criterion for production. According to this definition for production, almost six out of ten institutions have no production of researchers.

According to a 48 x 48 matrix of external and internal characteristics of the organization, significance for production of researchers, based on the H-Test, occurs under 170 sets of conditions. According to the frequency of their occurrence, eight variables appear with other institutional characteristics to provide 53 percent of the significant results. Thirty-five variables appear with other institutional characteristics to provide the remaining 47 percent of the significant results; frequency of occurrence for these 35 variables ranged from one to four. Five variables provide no sets of conditions for significant results. The eight variables are listed according to the rank order of their frequency under which significance occurs:

(1) an index of research quality (schools or departments of education mentioned or not mentioned as doing the most competent and worthwhile research);

(2) a scale of university reputation (Keniston's scale);

(3) a level of admission to the graduate program (proportion of students that applied to the graduate program that are accepted);

(4) level of agreement by deans on a factor claimed to be a hindrance to the advancement of educational research: low standards for acceptance of research articles in journals;

(5) size of the doctoral program (number of registered doctoral students);

(7) size of the social unit (proportion of doctoral degrees administered by the university in the academic year of 1962-63 that represent the doctorate in education;

(7) primary responsibility of the graduate faculty is research (based on the dean's estimate of the judgment of three groups within the graduate institution of education);

(7) institutional setting for obtaining data for the dissertation (inside or outside research organizations).

These institutional variables are considered relatively important for discussing issues on the production of researchers by graduate institutions of education.

In general, the direction of the more favorable results for production is in institutions that have several organizational variables operating to create a research environment. For example, having a high proportion of the graduate faculty doing research, a large range of research topics on which research is being conducted outside any research unit, an emphasis on graduate preparation for research, and a high rating for research as the primary responsibility of the graduate faculty, all operate effectively to yield a favorable production of researchers in institutions that have a closed level of admission. A proportionately comparable number of institutions having a high proportion of the graduate faculty doing research exists for institutions with a high or a low level of apprenticeships. However, production is more favorable by institutions with high ratings on each institutional characteristic.

Almost one-fourth of the significant conditions are provided by two organizational variables; namely, a scale of university reputation and an index of research quality.

According to this index of research quality and 22 other institutional characteristics, production of researchers is significant. The other organizational variables include, among others, formal entrance requirements for admission to the graduate program, proportion of doctoral students working for the Ph.D. for all three degree-administering situations, a level of admission to the graduate program, an index of an interdisciplinarily trained faculty, the rank of research as the primary activity of the graduate faculty, an index of required interdisciplinary courses, and the level of agreement on several items considered hindrances to the advancement of educational research.

Sixty-three percent of the 1964 doctoral recipients that met the criterion for production of researchers come from the institutions mentioned on an index of research quality. A brief resume is given of other organizational variables that are present in these institutions and have been shown to be relatively important factors for production of researchers.

Predominantly the institutions have a large doctoral program and a high production rate for doctoral recipients, but are small social units within the total university. They prevalently represent a high index of interdisciplinarily trained faculty and a high proportion of the graduate faculty doing research.

Almost all have a closed level of admission to the graduate program; few have a formal entrance requirement for admission to the graduate program. Predominantly they represent a high proportion of doctoral students working for the Ph.D. and have a graduate preparation for research emphasized in the institution. Many have a high index of required interdisciplinary courses. Finally, a high level of apprenticeships on projects and programs for training in research are prevalent in the institutions.

In general, the direction of the results for production of researchers appears to be more favorable in institutions that have not only a high "volume" of research activity but also a program for integrating the student's experiences in research.

Footnotes for Chapter III

1. There is a brief resume of the comparisons for production of researchers according to the two sources of data that have been used to define production and that represent two different questionnaire surveys.

   The 1964 institutional survey of deans of graduate institutions of education is noted herein as the Columbia-Survey. This survey had useable returns from 81 institutions; 65 of the 81 deans provided an estimated proportion of doctoral recipients in the past three years whose first position after receiving the degree was primarily in research.

   The questionnaire survey of the 1964 doctoral recipients is noted herein as the California-Survey. This survey had useable returns of 1750 doctoral recipients in education from 99 institutions. Thus, for each school a computed proportion was obtained for the 1964 doctoral recipients who immediately entered positions where research was the primary activity.

   When the Columbia-Survey was used as the base for comparison of differences, if any, between the estimated proportion and the computed proportion for production of researchers, the following information resulted.

TABLE 3.F.1--Number of institutions according to the direction of results for the comparison between the *estimated* proportion for production of researchers provided by the Columbia-Survey.

Direction of Results: the Columbia-Survey is the base for comparisons	Number of Institutions
1. Columbia-Survey has larger values:	26
1.1 Estimated proportions are a number-value, while the computed proportions equal 0: 19 schools	
1.2 Estimated proportions are a larger number-value than the computed proportions: 7 schools	

Direction of Results: the Columbia-Survey is the base for comparisons	Number of Institutions
2. Columbia-Survey has smaller values:	14
2.1 Estimated proportions equal 0, while the computed proportions do not: 5 schools	
2.2 Estimated proportions are a smaller number-value than the computed proportions: 9 schools	
3. Proportions for both surveys remain the same and equal 0.	19
4. The California-Survey excluded institutions on which the Columbia-Survey had institutional data:	8
4.1 The Columbia-Survey had institutional data as well as the measure for production of researchers: 6 schools	
4.2 The Columbia-Survey had institutional data except for the estimated proportion: 2 schools	
5. The Columbia-Survey had institutional data except for the estimated proportion for production; the California-Survey provided the measure for production.	14
Number of usuable return-sample in the Columbia-Survey:	81

2. The decision to use the actual number of doctoral recipients and not a proportion of the doctoral recipients from each school was two-fold. First, the range of actual subjects used for the measure was very small (0 to 9). Secondly, for the 22 schools that produced only one or two doctoral recipients who immediately entered positions where 50 to 100 percent of the professional time was devoted to research, 17 had a range for the proportion of doctoral recipients from 3 to 20 percent. For the remaining five schools, the range for the proportion was from 25 to 50 percent of the doctoral recipients; these five schools, however, had only two or four doctoral recipients in 1964. On the other hand, of the 16 schools that produced three to nine doctoral

recipients, only two represented a range between 20 and 25 percent of the doctoral recipients of the school of education. The school that produced 9 doctoral recipients, the highest number for the measure, represented only seven percent of the doctoral recipients of that school of education. Thus, (1) because the numbers representing the measure were very small for each school and (2) because the varying sizes of the doctoral recipients for each school created too varying ranges for a proportion to be used for the measure, the decision was made to use the actual number of doctoral recipients.

3. The names of the 21 graduate institutions that are mentioned on an index of research quality are listed below, according to the frequency with which the institution received a "mention." They are: Stanford University, the University of Wisconsin, Chicago University, Harvard University, the University of Illinois, Teachers College, Columbia University, the Ohio State University, the University of Minnesota, the University of Michigan, the University of California (Berkeley), Syracuse University, Boston University, the State University of Iowa, the University of Pittsburgh, Michigan State University, Ball State Teachers College, the University of Indiana, the University of Pennsylvania, the University of Southern California, the University of Texas, and Washington University. Forty-six deans and coordinators provided the above listing. The first nine institutions received a mention on the index with a frequency ranging between 10 and 23. The remaining 12 institutions have a range between one and six.

4. In this footnote there are four tables for the mean proportion for production of researchers by only graduate institutions of education mentioned on an index of research quality. The proportion represents each school's computed proportion of 1964 doctoral recipients who immediately entered positions where 50 to 100 percent of the professional time was devoted to research.

   In each table the sets of conditions on which a mean proportion for production is given represent the same sets of institutional variables on which a mean number for production has been given in tables in the text of the chapter.

   It is noted, however, that, when production has been defined according to a proportion, not a number of doctoral recipients, significance does not always occur for the same set of conditions that are presented in the text of the chapter. If significance for production of researchers defined as a proportion has not occurred according to an index of research quality and another institutional variable, it is noted by a double asterisk. (Also, recall that, if any k sample of a set of conditions has ≤ 3 cases, the H-Test has not been performed. Although for some sets of conditions this has been the case, still the data for the mean proportion for production have been presented in some of the following tables.)

TABLE 3.69.--Mean proportion for production of researchers by graduate institutions of education mentioned on an index of research quality according to some external and internal characteristics of the institutions.*

External and Internal Characteristics		Index of Research Quality Mentioned
1. Type of Legal Control:	Public	12.11% (9)
	Private	9.86% (7)
2. A Scale of University Quality:	Top 22	14.54% (11)
	Other AGS..., plus	3.33% (3)
	Other Universities	4.00% (2)
	Not included in the scale	No cases
3. An index of an Interdisciplinarily Trained Faculty:	High (9-85%)	12.71% (7)
	Low (0-8%)	10.75% (4)
4. Level of Admission to the Graduate Program:	Closed (20-76%)	16.38% (8)
	Open (77-98%)	2.50% (4)
5. Size of the Social Unit:	Small (0-17%)	12.82% (11)
	Large (18+%)	0.00% (2)
6. Primary Responsibility of the Graduate Faculty is Research:		
(a) based on the dean's estimate of the judgment of 10 groups inside and outside the university:	High (3-10)	12.44% (9)
	Low (0-2)	11.60% (5)
(b) based on the dean's estimate of the judgment of three groups in the school...of education:	High (1-3)	13.62% (8)
	Low (0)	10.17% (6)
7. Hiring Preference: Professors Trained outside a School of Education:	High (3-11)	15.33% (9)
	Low (0-2)	7.25% (4)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computation.

TABLE 3.70.--Mean proportion for production of researchers by graduate institutions of education mentioned on an index of research quality according to some general opinions and problems of educational research as perceived by deans of graduate institutions of education.*

General Opinions and Problems of Educational Research		Index of Research Quality
		Mentioned
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree:	Agree	12.33% (9)
	Disagree	11.80% (5)
2. Hindrances to the Advancement of Educational Research:		
(a) Intellectual ability of people doing research in education:	Yes	10.44% (9)
	No	12.67% (6)
(b) Types of services and studies desired by school systems:**	Yes	10.27% (11)
	No	14.25% (4)
(c) Lack of interest in educational research on the part of behavioral scientists outside schools of education:**	Yes	11.90% (10)
	No	10.20% (5)
(d) Lack of interest in research on the part of administrators of schools or departments of education:**	Yes	11.73% (11)
	No	10.25% (4)
(e) Low standards for acceptance of research articles in journals:	Yes	4.83% (6)
	No	15.67% (9)
(f) Lack of recognition and rewards for research accomplishment:**	Yes	12.00% (5)
	No	11.00% (10)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

**According to an index of research quality and the level of agreement by deans on these hindrances to the advancement of educational research, production of researchers, defined as a proportion of doctoral recipients, is not significant at the .05 level.

TABLE 3.71.--Mean proportion for production of researchers by graduate institutions of education mentioned on an index of research quality according to some organizational goals and administrative activities.*

Organizational Goals and Administrative Activities		Index of Research Quality
		Mentioned
1. Formal Entrance Requirements for Admission to the Graduate Program:**		
(a) Version 1:	None	12.00% (9)
	At least one	9.00% (5)
(b) Version 2: Teaching Certificate Required:	No	12.00% (9)
	Yes	9.00% (5)
2. Type of Doctorate in Education Administered:		
(a) Version 1:	Ph.D. only	15.50% (4)
	Ed.D. only	No cases
	Both the Ph.D. and the Ed.D.	9.67% (12)
(b) Version 2: Proportion of Doctoral Students Working for the Ph.D. (for all three degree-administering situations):**	High (25-100%)	11.70% (10)
	Low (0-24%)	9.00% (4)
3. Type of Graduate Preparation Emphasized:**	Research (alone plus others)	11.62% (8)
	Non-Research	10.08% (6)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

**According to an index of research quality and these institutional characteristics, production of researchers, defined as a proportion of doctoral recipients, is not significant at the .05 level.

TABLE 3.72.--Mean proportion for production of researchers by graduate institutions of education mentioned on an index of research quality according to certain activities for training in research provided by the institution.*

Activities for Training in Research	Index of Research Quality Mentioned
1. Courses:	
(a) Proportion of graduate education courses that are research courses:	
High (7-24%)	11.38% (8)
Low (1-6%)	10.88% (8)
(b) Proportion of research courses that have research entrance requirements:**	
High (36-96%)	11.58% (12)
Low (0-35%)	9.75% (4)
(c) Required interdisciplinary courses: number of departments offering courses outside the institution of education that students in education are required to take:**	
High (2+)	12.50% (6)
Low (0-1)	7.50% (4)
2. Level of Apprenticeships on Projects outside any Research Organization:	
High (.9-88%)	13.60% (5)
Low (0-.8%)	11.00% (2)
3. Institutional Setting for Obtaining Data for the Dissertation:	
Inside research units	13.56% (9)
Outside research units	4.50% (2)
4. Program for Training in Research:	
Version 1: Type of training program:	
Special	7.86% (7)
Part of regular degree program	17.20% (5)
None	10.00% (3)
Version 2: program: Existence of a training	
Yes (special plus part of regular degree program	11.75% (12)
No	10.00% (3)

*Numbers in parentheses represent the base of means and vary because non-respondents to questions are omitted from the computations.

**According to an index of research quality and these institutional characteristics, production of researchers, defined as a proportion of doctoral recipients, is not significant at the .05 level.

CHAPTER IV

A REVIEW OF THE EFFECTS ON THE RESULTS FOR PRODUCTION OF RESEARCHERS BY GRADUATE INSTITUIONS OF EDUCATION ACCORDING TO TWO OPERATIONAL DEFINITIONS FOR PRODUCTION

As stated in the overview of chapter three, in some recent reports on the topic of training for careers in educational research, the production of researchers by graduate institutions of education has been operationally defined as the mean proportion of doctoral recipients who upon the receipt of the degree entered positions where research was the primary activity (90, p. 9; 119, p. 259; 121, p. 7). Data, obtained from the 1964 institutional survey of deans of graduate institutions of education, represent an estimated proportion of the doctoral recipients in the past three years whose first position after receiving the degree was primarily in research (119).

Upon the receipt of the data from the questionnaire survey of the 1964 doctoral recipients by Buswell, McConnell, et al. (23), the writer computed for each institution represented in the survey the proportion of 1964 doctoral recipients who immediately entered positions which had been coded both "full-time research in education, all types of positions," and "university professor" with 100 percent of the professional time devoted to research. Thus, a comparable measure has been obtained for production of researchers operationally defined as a proportion of the doctoral recipients who upon the receipt of the degree entered positions where research was the primary activity.

Both measures have been examined by the test statistic, H, according to the same 48 x 48 matrix of institutional variables presented in Appendix C and discussed in chapter three.

Thus it becomes the purpose of this chapter to give a brief review of the effects on the results for production of researchers by graduate institutions of education according to these two measures for production.

Before presenting the discussion on the effects of using the two measures, some statements concerning the procedures and the sample for the data are in order.

The 1964 institutional survey of deans of graduate institutions of education is noted herein as the Columbia-Survey. This survey had useable returns from 81 institutions; 65 of the 81 deans provided an estimated proportion of doctoral recipients in the past three years whose first position after the receipt of the degree was primarily in research.

The questionnaire survey of the 1964 doctoral recipients in education is noted herein as the California-Survey. This survey had useable returns of 1750 doctoral recipients from 99 graduate institutions of education. As stated above, a computed proportion of doctoral recipients that met the criterion for the measure of production was obtained for each institution.*

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*Although very near the tabled value for significance at the .05 level (one-tailed test), with 162 d.f. the computed t-value, 1.622, is not significant at the .05 level. Thus, one cannot conclude that the estimated mean proportion for production is significantly larger than the computed mean proportion for production of researchers:

$$6.092_{\text{(estimated prop.)}} - 3.848_{\text{(computed prop.)}} / 1.338 = 1.622.$$

Of the useable returns from the Columbia Survey, 65 institutions had estimated proportions for the measure. However, according to the Columbia-Survey, eight of the 81 institutions that had been included in the 1964 institutional survey and had been useable returns were not represented in the California-Survey. Thus, computed proportions for production were available for 73 of the institutions represented as usuable returns from the Columbia-Survey. The reader is referred to footnote two of chapter three for a comparison on the direction of differences between the estimated proportion and the computed proportion for production of researchers, when the Columbia-Survey is the base for comparing the direction of differences.

Attention is now turned to the review of the effects on the results for production according to the two measures for production of researchers.

Three procedures are used to present the review. First, there is a table, similar to Table 3.13 in chapter three, that gives a list of the institutional variables which provide a large percent of the sets of conditions for which significant results occur. Secondly, there is a list of the variables that appear to yield different results; difference is defined according to the frequency with which a particular variable with other institutional characteristics yield significance for production of researchers. Thirdly, there are a few tables presented which illustrate the direction of the more favorable results for production is different according to the two measures for production.

According to a 48 x 48 matrix of institutional variables, significance for production of researchers by graduate institutions of education, defined as an estimated proportion, occurs under 188 sets of conditions. Of the 48 variables, one provides no set of conditions for significant results. Eight variables appear with other institutional characteristics to provide 51 percent of the significant sets of conditions. The remaining 92 conditions are explained by 39 variables appearing with other variables from one to five times.

Table 4.1a (page 187) provides the data for the eight institutional variables that may have been considered relatively important in discussing the issues about the production of researchers, if the estimated proportion had been used as the measure.

According to a 48 x 48 matrix of the same institutional variables, significance for production of researchers, defined as a computed proportion, occurs under 64 sets of conditions. Twenty of the organizational variables yield under no set of conditions significance for production at the .05 level. Forty-four percent of the sets of conditions occur according to five variables. Six variables appear with other institutional characteristics three times; one variable appears in a set of conditions twice and 16 variables appear once in a set of conditions to yield significance. Thus, the remaining 56 percent of the 64 conditions are provided by 23 variables.

Table 4.1b (page 188) provides the data for the five institutional variables that may have been considered relatively unimportant in discussing the issues about the production of researchers, if the computed proportion had been used as the measure for the report.

TABLE 4.1a.--The rank order of eight variables that provide 51 percent of the 188 sets of conditions that yield significance for the production of researchers by graduate institutions of education according to the frequency of their occurrence: production represents an estimated proportion.*

Rank Order	Institutional Variable	Number of Times the H-Test Yields Significance for Production of Researchers.
1.	Production rate: proportion of registered doctoral students in the academic year of 1963-64 that received the doctorate in education in the academic year of 1962-63.	39
2.	Level of admission to the graduate program.	13
3.	Size of the doctoral program: number of registered doctoral students.	12
4.	Proportion of doctoral students working for the Ph.D. according to all three degree-administering situations.	8
6.	A scale of university reputation.	6
6.	Proportion of funds representing the financing of research projects being conducted outside any research unit by the research funds in the university and in the school of education.	6
6.	Formal entrance requirement for admission to the graduate program: professional experience.	6
6.	Existence of a program for training in research.	6

*Production is defined as the estimated proportion of doctoral recipients in the past three years whose first position after receiving the degree was primarily in research.

TABLE 4.1b.--The rank order of five variables that provide 43 percent of the 64 sets of conditions that yield significance for the production of researchers by graduate institutions of education according to the frequency of their occurrence: production represents a computed proportion.*

Rank Order	Institutional Variable	Number of Times the H-Test Yields Significance for Production of Researchers
1.	Level of admission to the graduate program.	8
2.	A scale of university reputation.	6
3.5	An index of research quality.	5
3.5	Level of agreement by deans: low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research.	5
5.	A research index of interdisciplinary relations: number of research arrangements between the graduate institution of education and academic departments and other professional schools inside and outside the university.	4

*Production is defined as the computed proportion of the 1964 doctoral recipients who upon the receipt of the degree entered positions where research was the primary activity.

Comparisons of the significant results for production provided by each operational measure yield the following differences. When the results are obtained by the measure of an estimated proportion, almost three times as many significant sets of conditions occur. When the results are obtained by the measure of a computed proportion, 20 variables fail to appear under any set of significant conditions; only one variable fails to appear, according to production defined as an estimated proportion. Only two institutional variables appear both in Table 4.1a and Table 4.1b; namely, level of admission to the graduate program and a scale of university reputation. Finally, the variable which appears significant in 39 sets of conditions according to Table 4.1a is production rate. Only in one set of conditions does this same variable appear--when production represents a computed proportion.

There is a final note before presenting the second procedure for comparing the effects.

As one will recall, in Matrix C-1 of Appendix C, there are results of the H-Test for the production of researchers according to a 48 x 48 matrix of institutional variables. Production has been defined as the number of 1964 doctoral recipients who immediately entered positions where research was the primary activity. In Table C.1, the data are given for the eight variables that provide 52 percent of the 192 sets of conditions for which significance occurs.

One will note that some variables in all three tables appear as being relatively important for production of researchers. According to the two measures for production, an estimated proportion and a number of doctoral recipients, the same variables that appear in sets of conditions for which significance occurs rather frequently and that are considered (according to both definitions for production) to be relatively important (Table 4.1a and Table C.1) are: (1) level of admission to the graduate program and (2) a scale of university reputation. According to the two measures for production of researchers (the computed proportion and the number of doctoral recipients) the same variables that appear in sets of conditions for which significance occurs rather frequently and that are considered (according to both definitions for production) to be relatively important (Table 4.1b and Table C.1) are: (1) an index of research quality; (2) level of admission to the graduate program; (3) level of agreement by deans: low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research; (4) a research index of interdisciplinary relations; and (5) a scale of university quality.

According to the first procedure for examining the results for production of researchers defined as an estimated proportion and a computed proportion of doctoral recipients, there are two general conclusions. First, gross differences do exist according to the number of sets of conditions that yield significant results for production of researchers. Secondly, there still prevails, however, certain institutional variables that are relatively important for explaining production, no matter which measure is used. One is a social structure characteristic of the institution, level of admission to the graduate program. The other is an environmental characteristic of the organization; namely, a scale of university reputation. One will recall that these two organizational variables have been shown in chapter three to be relatively important for explaining production, defined as the number of 1964 doctoral recipients who immediately entered positions where 50 to 100 percent of the professional time was devoted to research.

The second procedure in analyzing the effects on results on production according to the two measures for production is to examine the variables according to the direction of different frequencies with which they appear with other institutional characteristics to yield significant sets of conditions. The procedure entails observing the number of times each variable with other institutional characteristics yields significant results for production according to each measure for production. This is done for all 48 institutional variables. Then, a difference is taken between the frequency of one variable appearing in sets of significant conditions under one measure for production and the frequency of the same variable appearing in sets of significant conditions under the second measure for production. For example, the variable--production rate--appears with 39 other institutional characteristics to yield significant results for production of researchers, defined as an estimated proportion. However, when production is defined as a computed proportion, the variable--production rate--appears with only one other variable to yield significant results at the .05 level. Thus, a difference of 38 is obtained for the frequency with which the variable, production rate, appears according to the two measures for production.

The procedure ignores the sign of the direction. Also, the procedure does not assume the comparability of the variable-names that appear with a particular variable that yields significant sets of conditions under each measure for production. In other words, the data in Table 4.2a simply reflect a difference between the frequency of one variable's yielding significant sets of conditions for production defined as an estimated proportion and the frequency of the same variable's yielding significant sets of conditions for production defined as a computed proportion.

TABLE 4.2a.--The number of organizational variables according to the difference between the frequency of one variable appearing in sets of significant conditions for production of researchers defined as an estimated proportion and the frequency of the same variable appearing in sets of significant conditions for production of researchers defined as a computed proportion.

The Difference between the Frequency of Yielding Significant Sets of Conditions Is:	Number of Organizational Variables
0	6
1	19
2	6
3	7
4	2
5	3
6	2
≥ 7	3
Number of organizational variables under which the production of researchers has been examined by the H-Test:	48

The discussion of the data presented in Table 4.2a covers two areas. Since so many organizational attributes have been considered, a few highlights are first given for some differences and similarities between a few selected variables. The second area of discussion concentrates on the 10 variables whose frequency of difference is between 4 and ≥ 7.

First, there are many differences between the variable-names appearing with one variable to yield significance according to production defined as an estimated proportion and the variable-names appearing with the same variable to yield significance according to production defined as a computed proportion.

According to only eight variables under the production of researchers defined as a computed proportion, is the frequency of appearing with other institutional characteristics larger. However, the difference is only one or two. The eight are: type of degree administered: only for schools that administer both the Ph.D. and the Ed.D.; type of graduate preparation emphasized: both versions of the variable; proportion of the graduate faculty doing research; level of agreement by deans on two hindrances to the advancement of educational research: (a) intellectual ability of people doing research in education and (b) low standards for acceptance of research articles in journals; rank on research as the primary activity of the graduate faculty: measure based on the estimate of the judgment of three groups within the department of education; and an index of research quality.

There are six variables whose difference is zero on the frequency in appearing with other institutional variables according to the two measures for production. The variable-names of the institutional characteristics that appear with one variable according to production defined as an estimated proportion are not necessarily the same variable-names of the institutional characteristics that appear with the same variable according to production defined as a computed proportion. The six variables with their frequency of occurrence given in parentheses are: a scale of university reputation (6); size of the social unit (3); index of interdisciplinarily trained faculty (3);

jurisdiction over the doctoral program (1); an index of required interdisciplinary courses (1); an index of interdisciplinary relations (1).

The second area of discussion pertains to the 10 variables whose range of difference on frequency of occurrence is between 4 and ≥7. Table 4.2b (page 195) gives names of the 10 variables and the frequency with which each appears with other institutional characteristics to yield significance according to the two measures for production.

As shown by the data in Table 4.2b, there are many more variables that would receive attention for yielding conditions of significant results for production of researchers defined as an estimated proportion. Also, the asterisked numbers show the non-comparability of variable-names of other institutional-characteristics appearing with a particular variable according to the two measures for production.

According to the second procedure for examining the effects on the results, there are three general conclusions. First, for most of the 48 institutional variables there is a wide range of difference between the frequencies with which each appears with other organizational characteristics to yield significance for production according to which operational measure is used for production. Secondly, the non-comparability of the variable-names of other institutional characteristics that appear with the same variable according to the two measures for production is noted. Thus, the discussion of the relatively important organizational variables for explaining production would be different according to which measure for production is used. Thirdly, since differences occur in the frequencies with which variables appear with other characteristics to yield significant sets of conditions, TABLE 4.2b.--The variable-names of the 10 institutional characteristics which provide the larger differences between the frequencies of appearing with other organizational variables to yield significance according to the two measures for production of researchers.

Variable-Name	Number of Times the Variable Appears with other Institutional Characteristics According to Production Defined as		
	An Estimated Proportion	A Computed Proportion	Difference
1. Preference to hire professors who mostly have done research.	4	0	4
2. Level of agreement on the opinion that the two types of doctorate in education should be specialized degrees.	5	1*	4
3. Level of admission to the graduate program.	13	8*	5
4. Existence of a program for training in research.	6	1	5
5. Level of apprenticeships.	5	0	5
6. Formal entrance requirement for admission to the graduate program: professional experience.	6	0	6
7. Financing projects being conducted outside any research unit by the research funds in the university and in the school of education.	6	0	6
8. Proportion of doctoral students working for the Ph.D.: for all three degree-administering situations.	8	1*	7
9. Size of the doctoral program.	12	0	12
10. Production rate for doctoral recipients.	39	1	38

*Between one and four of the other institutional characteristics do not appear with the same variable to yield significance for production defined as an estimated proportion.

then it is assumed that differences also occur according to the value of the institutional characteristic that may provide the more favorable results for production of researchers.

The third conclusion becomes the purpose of the third and final procedure for examining the effects on results. This is accomplished by taking certain sets of conditions which yield significant results by each measure and noting for each measure the direction of the more favorable situation for production.

Only a few selected conditions, representing both external and internal characteristics, are used to illustrate this procedure. The direction of the more favorable situation is underlined in each set of conditions for each operational definition of production. Finally, the sets of conditions used in the following tables are significant according to each measure and represent the same variable-names. General discussion of the data does not follow each table but occurs after Table 4.8.

TABLE 4.3.--A comparison between the mean proportions for production of researchers operationally defined by two measures, according to a scale of university reputation and an index of interdisciplinarily trained faculty.*

	Keniston's Scale of University Reputation			
Index of Interdisciplinarily Trained Faculty	Top 22	Other AGS..., plus	Other Universities	Not Included in the Scale
(a) Production defined as an estimated proportion:				
High (9-85%)	12.60 (5)	6.57 (7)	6.29 (7)	2.67 (12)
Low (0-8%)	11.33 (6)	13.50 (4)	5.71 (7)	1.36 (11)
(b) Production defined as a computed proportion:				
High (9-85%)	8.50 (6)	1.38 (8)	0.50 (6)	14.36 (11)
Low (0-8%)	4.83 (6)	1.60 (5)	4.12 (8)	0.00 (7)

*Numbers in parentheses in this table and the following tables (4.4-4.8) represent the base for mean proportions. They vary because the second measure for production excludes and includes a few institutions not represented in the first measure (recall footnote two of chapter three). The underlined values in this table and the following tables (4.4-4.8) represent the largest mean proportion under each measure.

TABLE 4.4.--A comparison between the mean proportions for production of researchers operationally defined by two measures, according to the level of admission to the graduate program and the size of the social unit.

Size of the Social Unit	Level of Admission Closed (20-76%)	 Open (77-98%)
(a) Production defined as an estimated proportion:		
Small (0-17%)	11.50 (14)	4.11 (9)
Large (18+%)	6.33 (12)	4.53 (19)
(b) Production defined as a computed proportion:		
Small (0-17%)	7.00 (16)	5.89 (9)
Large (18+%)	0.30 (10)	3.11 (18)

TABLE 4.5.--A comparison between the mean proportions for production of researchers operationally defined by two measures, according to the level of admissions to the graduate program and the type of graduate preparation emphasized.

Type of Graduate Preparation Emphasized	Level of Admission Closed (20-76%)	 Open (77-98%)
(a) Production defined as an estimated proportion:		
Research (alone plus others)	18.00% (5)	6.40% (5)
Non-research	7.35% (20)	3.96% (23)
(b) Production defined as a computed proportion:		
Research (alone plus others)	9.40% (5)	11.00% (6)
Non-research	3.24% (21)	2.05% (21)

TABLE 4.6.--A comparison between the mean proportions for production of researchers operationally defined by two measures, according to the level of admission to the graduate program and the range of research topics on which research is being conducted.

	Level of Admission	
Range of Research Topics	Closed (20-76%)	Open (77-98%)
(a) Production defined as an estimated proportion:		
Large (9-25)	14.78 (9)	5.64 (14)
Small (0-8)	6.00 (12)	3.38 (13)
(b) Production defined as a computed proportion:		
Large (9-25)	7.50 (10)	1.14 (14)
Small (0-8)	2.82 (11)	8.18 (11)

TABLE 4.7.--A comparison between the mean proportions for production of researchers operationally defined by two measures, according to the production rate for doctoral recipients and an index of interdisciplinarily trained faculty.

	Production Rate	
Index of Interdisciplinarily Trained Faculty	Large (14+%)	Small (0-13%)
(a) Production defined as an estimated proportion:		
High (9-85%)	7.40 (15)	4.92 (13)
Low (0-8%)	10.85 (13)	2.40 (15)
(b) Production defined as a computed proportion:		
High (9-85%)	3.18 (17)	14.73 (11)
Low (0-8%)	3.85 (13)	1.54 (13)

TABLE 4.8.--A comparison between the mean proportions for production of researchers operationally defined by two measures, according to the existence of a program for training in research and the level of agreement by deans on a hindrance to the advancement of educational research: low standards for acceptance of research articles in journals.

	Existence of a Training Program	
Low Standards... are a hindrance	Yes (special plus part of the regular degree program	No --
(a) Production defined as an estimated proportion:		
Yes	6.33 (15)	1.40 (10)
No	12.40 (10)	5.46 (22)
(b) Production defined as a computed proportion:		
Yes	2.12 (16)	7.30 (10)
No	8.23 (13)	5.21 (19)

A general summary and discussion of the data shown in Tables 4.3-4.8 follow.

First, all the institutional variables represented in Tables 4.3-4.8 not only yield significant results for production of researchers under each measure but also are the same set of conditions. Three sets of conditions which have not been presented have the same variable-names and provide significance, according to each measure. The three sets are for production of researchers, according to (1) a scale of university reputation and the level of agreement by deans on the opinion, low standards for the acceptance of research articles in journals are a hindrance to the advancement of educational research; (2) a scale of university reputation and type of legal control; and (3) level of admission to the graduate program and proportion of doctoral students working for the Ph.D. in schools that administer both the Ph.D. and the Ed.D. Thus, only according to nine sets of conditions yielding significant results under each measure is there comparability of variable-names for the sets of conditions. Therefore, the remaining 59 sets of significant conditions under production defined as a computed proportion differ in variable-names of the institutional characteristics of any of the remaining 179 sets of significant conditions under production defined as an estimated proportion.

Secondly, only in two of the nine sets of conditions does there exist the same direction for the more favorable situation for production, according to each measure. ("Direction of the more favorable situation" means that the highest mean production is provided by a certain category of each of the two institutional variables being examined.)

The first set of conditions concerns production of researchers, according to the level of admission to the graduate program and the size of the social unit (Table 4.4). For both measures, the highest mean value is provided by institutions with a closed level of admission and a small social unit. The second set concerns production, according to the existence of a program for training in research and the level of agreement by deans on a hindrance to the advancement of educational research (Table 4.8). For both measures, the highest mean value is provided by institutions with a training program and the deans' disagreeing that low standards for acceptance of research articles in journals are a hindrance.

For the other seven sets of conditions, data indicate that a certain category of each of the two variables that provide the highest mean production under one measure is different from the category of one or both of the variables that yield the highest mean value under the second measure. For example, for production of researchers, according to a scale of university reputation and an index of interdisciplinarily trained faculty (Table 4.3), the more favorable situation for production is different under each measure. If production is defined as an estimated proportion, the highest mean value is provided by graduate institutions of education that have a low index and belong to "other AGS universities, plus." If production is defined as a computed proportion, the highest mean proportion is yielded by graduate institutions of education that have a high index of interdisciplinarily trained faculty and belong to universities "not included in the scale." The same trend for results may be observed for the three sets of conditions presented in Tables 4.5-4.7.[1]

A final example is given to illustrate that each operational measure for production provides different data and, perhaps, different conclusions. Data shown in Table 4.9 give the proportion of graduate institutions with varying proportions of doctoral recipients who upon the receipt of the doctorate immediately entered positions where research was the primary activity. According to production defined as an estimated proportion, about four out of ten institutions had no doctoral recipients enter primarily "research" positions. According to production defined as a computed proportion, almost six out of ten institutions had no doctoral recipients enter primarily "research" positions.

TABLE 4.9.--A comparison of the proportion of the graduate institutions with varying proportions of doctoral recipients entering research positions according to the two operational definitions for production of researchers.*

Proportion of Doctoral Recipients Entering Research	Proportion of Institutions According to Production Defined as An Estimated Proportion	Proportion of Institutions According to Production Defined as A Computed Proportion
0%	43.1%	59.0%
1-7%	27.7	20.5
8% or more	29.2	20.5
	100.0%	100.0%
	(65)	(73)

*Numbers in parentheses represent the base for the proportions and vary because the definition of production as a computed proportion excludes and includes a few institutions not represented in the other measure (recall footnote two of chapter three).

There are three general summaries from the analyses of the third procedure. First, there are relatively few sets of the same conditions appearing significantly under each measure. Secondly, only two of the nine sets of same conditions that have the highest mean value for production in institutions classified according to the same values of the same variables. The remaining seven sets of conditions yield differences for the highest mean value by a particular institutional setting. Thirdly, under each measure, not only will the highest mean value differ by the type of institutional setting but also the other mean values for the categories will be strikingly different. Thus, just as different implications resulted from the data shown in Table 4.9, different interpretations and implications of the data result from the H-Test, according to the two operational definitions of production of researchers.

Three general conclusions emerge from the three procedures for analyzing the effects on the results for production of researchers by graduate institutions of education, according to the two measures for production. First, according to which operational definition for production of researchers is used, not only will conditions yielding significance by the H-Test differ but also the direction of the more favorable situations for production will differ. Thus, interpretation of the data in many ways is very dependent upon which definition for production is used.

Secondly, it seems at this particular time that the issue is not which measure for production is better. Both have limitations. Two limitations for the measure defined as an estimated proportion are:

the fact that it is an estimate rather than an actual proportion and the fact that it represents no control on the size of the doctoral recipients from each institution. In many cases, the larger proportions for production of researchers represent institutions whose total number of doctoral recipients is relatively small. This latter limitation is also applicable for the second measure for production. Another limitation of the measure representing a computed proportion is the assumption that it, in fact, represents the "real" production by institutions. This assumption does not necessarily hold because it is unknown at this time if the data represent a typical or an atypical year. These limitations lead to the third conclusion.

It seems that, in order to incorporate the dynamics of an organization's inputs and outputs concerning the development of research, a model must be developed that over periods of time controls for the measures that are assumed to relate with the output, production of researchers. Similarly, the model should incorporate a measure on which no data are available from the study at this time but which is considered very important to the issue on production of researchers. This measure deals with the opportunities available to doctoral recipients in education to do research. In other words, what range of job opportunities do exist for doctoral recipients in education to do research? The implications of this question are discussed in more detail in the chapter concerning recommendations resulting from the analyses of data presented in the report.

Footnotes for Chapter IV

1. For the three sets of conditions which are not presented in the tables of the test, the more favorable situation for production differs, according to which measure for production is used.

   One set concerns the production of researchers, according to a scale of university reputation and the level of agreement by deans on a hindrance to the advancement of educational research. If production is defined as an estimated proportion, the highest mean value is by institutions belonging to the Top 22 universities and having the deans disagree that low standards...are a hindrance (15.86 percent). If production is defined as a computed proportion, the highest mean value is by institutions whose deans agree with the item and that belong to universities not included in the scale (8.75 percent).

   The second set concerns the production of researchers, according to the type of legal control and a scale of university reputation. If production is defined as an estimated proportion, the highest mean value is by institutions belonging to the Top 22 universities. that are publicly controlled (11.60 percent). If production is defined as a computed proportion, the highest mean value is by institutions belonging to universities publicly controlled and not included in the scale (10.77 percent).

   The third set concerns production of researchers, according to the proportion of doctoral students working for the Ph.D. in graduate institutions that administer both the Ed.D. and the Ph.D. in education and the level of admission to the graduate program. If production is defined as an estimated proportion, the highest mean value is by institutions with a low proportion working for the Ph.D. and a closed level of admission (11.00 percent). If production is defined as a computed proportion, the highest mean value is by institutions with a high proportion working for the Ph.D. and a closed level of admission (6.29 percent).

CHAPTER V

PRODUCTION OF RESEARCHERS BY RESEARCH ORGANIZATIONS AFFILIATED WITH GRADUATE INSTITUTIONS OF EDUCATION

The purposes of chapter five are similar to those of chapter three. First, it is to relate the opportunities for obtaining routines, skills, and sensitivities for research that are provided by research organizations affiliated with graduate institutions of education. Second, there is presentation of the analyses for production of researchers by the research organizations, according to organizational characteristics and arrangements that may be associated with this institutional output.

The data reported in the chapter reflect the attributes of the organization. By observing the behavioral patterns of the socializer and the psychological, social and cultural characteristics of the setting for socialization, one may be able to discern institutional efforts for the production of researchers by these sub-units of the parent organization.

There are three sections: (1) an overview of programs and activities for training in research provided by the research organization; (2) production of researchers by research organizations according to three organizational variables considered relatively important for production; and (3) a brief summary of the findings reported in the chapter.

A. An Overview of Programs and Activities for Training in Research Provided by the Research Organizations

According to the 1965 institutional survey of directors of research organizations affiliated with graduate institutions of education, most of the directors (81 percent) consider the quality of research training provided in graduate institutions of education to be a hindrance to the advancement of educational research. And, similar to the deans of the institutions, 49 percent (63) of the directors check the item as a major hindrance.

Although most directors do not visualize relinquishing most of the research training of the graduate students to a source outside the school of education, a little over one-third of the directors (36 percent) either agree with or are undecided about the issue. Table 5.1 provides information on the debatable issue.*

TABLE 5.1.--Proportion of directors of research organizations according to the level of agreement on the opinion, advisability of receiving most training in research outside schools of education.

"Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.*	Proportion of Directors
Strongly agree	6%
Mostly agree	19
Undecided	11
Mostly disagree	41
Strongly disagree	22
	99%
Number of research units:	(63)

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*In Appendix F of the report, there are tables providing comparisons of responses by directors, according to the level of agreement on general educational opinions and problems facing educational research and certain institutional characteristics of research organizations.

To obtain some perspective on the directors' responses to the attitudes, an assessment is needed of the activities and programs for training in research provided by the research organizations.

According to the 64 usuable-returns to the institutional survey of the directors, most of the research units (86 percent) do have doctoral students in education either working with projects in units or associated in some capacity with them. Only a little over one-third of the research units have a systematic apprenticeship program for the students affiliated with the units. Almost two-thirds have what might be generally termed as "get-around plus hire-leave policies." Table 5.2 presents data on the three kinds of arrangements.

TABLE 5.2.--Proportion of units according to the type of training arrangements provided by the research organization.

Which of the following statements is most applicable to your unit?	Proportion of Units
There is a training program, allowing students to be moved from project to project as best suits their abilities and needs.	35%
Although there is no training program, students manage to get around to various projects.	31
Students are hired to do specific tasks and tend to leave the unit as soon as their job is completed.	35
	101%
Number of units with students:	(52)

If units are in institutions with training programs, more tend to have training programs than do those in institutions with no programs for training in research. Table 5.3a gives the data.

TABLE 5.3a.--Proportion of organizations according to the existence of a program for training in research provided by the graduate institutions of education and the type of training program provided by the research organizations.

Type of Program Provided by the Unit	Existence of a Program for Training in Research in the Graduate Institution of Education	
	Yes (special plus part of the regular degree program)	No
Systematic apprenticeship program	44%	11%
"Get-around policy"	19	78
"Hire-leave policy"	38	11
	101%	100%
Number of units with students:	(32)	(9)

Another way of presenting the data is to observe the combination of the institutional program for training in research and the unit's training program. Table 3.5b presents data according to the combination of these institutional variables (see page 211).

The data, shown in Table 3.5b, illustrate the point that the larger proportion of units do not have training programs, even when the institutions to which they belong do provide some program for training in research (44 percent). And only one-third of the units that have a special program exist in institutions with a comparable program (34 percent). It appears that only a very few research organizations provide overt behavioral patterns indicative of preparing individuals for careers in research.

According to the organizational attribute of the presence of a training program in the organization, proportionately more directors

TABLE 5.3b.--Proportion of research organizations according to the organizational combination of the types of programs for training in research provided by the graduate institution of education and the research organization.

Organizational Combination of the Types of Training Programs		Proportion of Organizations
Institution's Program	Unit's Program	
Special + part of...degree program	Systematic apprenticeship	34%
Special + part of...degree program	None	44
None	Systematic apprenticeship	2
None	None	20
		100%
	Number of units with students:	(41)

state that a hindrance to the advancement of educational research is the quality of research training provided by the graduate institutions of education.

TABLE 5.4.--Proportion of directors according to the existence of a program for training in research provided by the unit and the level of agreement on a hindrance to the advancement of educational research, the quality of research training provided in graduate schools or departments of education.

	Existence of a Training Program	
Quality of research training... is a hindrance...	Systematic Apprenticeship Program	No ("get-around + hire-leave policies")
Major	50%	47%
Minor	44	31
No	6	22
	100%	100%
Number of units with students:	(18)	(32)

Directors who are involved themselves with programs for training in research tend to be more aware of the strengths, the weaknesses, and the effectivenesses of such programs. Thus, their standards of judgment on the item perhaps reflect their experiences in the activity of training for research.

According to the opinion on the advisability of receiving most training in research outside schools of education, more directors of research organizations having a systematic apprenticeship program tend to agree with the item. Table 5.5 presents the information.

TABLE 5.5.--Proportion of directors according to the existence of a training program provided by the unit and the level of agreement on the item, the advisability of receiving most training in research outside the school of education.

"Students should receive most of their research training outside the school of education."	Existence of a Training Program: Systematic Apprenticeship Program	Existence of a Training Program: No ("get-around + hire-leave policies")
Strongly agree	6%	9%
Mostly agree	28	12
Undecided	0	15
Mostly disagree	39	42
Strongly disagree	28	21
	101%	99%
Number of units with students:	(18)	(33)

Although the level of disagreement to the item is comparable, in units with no training program proportionately more of the directors are undecided about relinquishing most of the research training of graduate students in education to an outside source. In units with a systematic apprenticeship program, proportionately more of the directors agree (34 percent *vs.* 21 percent). Although all nuances of the situation that yield the responses to the item are unknown, one ponders two issues. Is the "undecided" category for directors of units without a training program relatively high because proportionately more of this group experiences difficulty in obtaining qualified students to work in projects in the unit (63 percent *vs.* 50 percent)? Is indecision on the item reflecting that proportionately more state that problems have arisen in coordinating the training program of the unit with the program provided in the parent organization (41 percent *vs.* 28 percent)?

The second issue pertains more to the directors of units with a systematic apprenticeship program. Do proportionately more tend to agree with the item because they feel that preparation for research tends not to be an integral part of the program or purpose of the parent organization? For example, proportionately more of the directors state a hindrance to the advancement of educational research is the lack of interest in research on the part of administrators of graduate institutions of education (72 percent _vs._ 56 percent). And does their agreement tend to reflect a desire for graduate students in education who desire a career in educational research to enter more readily the research community of the graduate faculties by having most of their training in research provided by behavioral scientists outside schools of education? Will such activity perhaps increase the interest in educational research on the part of these behavioral scientists? One item that tends to support the latter question is that proportionately more of the directors of this type of organization state that the lack of interest in educational research on the part of behavioral scientists outside schools of education is a hindrance to the advancement of educational research.

The direction of the results is similar for these two attitudinal items, according to the existence of a program for training in research provided by the parent organization. In order words, in graduate institutions of education that have training programs, proportionately more of the directors of units affiliated with these institutions tend to agree with the item claimed to be a hindrance and with the advisability of receiving most research training outside schools of education. Tables 5.6a and 5.6b show the direction of results for these two opinions held by directors of research organizations.

TABLE 5.6a.--Proportion of directors according to the existence of a program for training in research provided by the graduate institutions to which the units belong and the level of agreement on a hindrance to the advancement of educational research: the quality of research training provided in graduate schools or departments of education.

	Existence of a Training Program in the Graduate Institution	
Quality of research training... is a hindrance...	Yes (special + part of... degree program)	No
Major	50%	46%
Minor	33	27
No	17	27
	100%	100%
Number of units with students	(36)	(11)

TABLE 5.6b.--Proportion of directors according to the existence of a program for training in research provided by the graduate institutions to which the units belong and the level of agreement on the item, the advisability of receiving most training in research outside the school of education.

	Existence of a Training Program in the Graduate Institution	
"Students should receive most of their research training outside the school of education."	Yes (special + part of... degree program)	No
Strongly agree	8%	9%
Mostly agree	22	9
Undecided	8	18
Mostly disagree	39	27
Strongly disagree	22	36
	99%	99%
Number of units with students:	(36)	(11)

Data shown in Tables 5.6a and 5.6b tend to support the data shown in Tables 5.4 and 5.5. That is, where the institutional setting has a program for training in research, slightly more directors tend to sivualize that (1) the quality of research training provided in graduate institutions is a hindrance to the advancement of educational research and that (2) most research training should be received outside the school of education.

According to the organizational combination of the institution's and the unit's programs for training in research, there is slightly more agreement on both opinions by directors who represent both types of institutional settings for providing training programs. Tables 5.7a and 5.7b provide the data.

TABLE 5.7a.--Proportion of agreement by directors of units on the hindrance, the quality of research training provided in graduate institutions of education, according to the existence of a program for training in research provided in the graduate institution and the existence of a systematic apprenticeship program provided in the research organization.

	Existence of a Training Program in the Graduate Institution	
Existence of a Training Program in the Unit that has Students	Yes (special + part of... degree program)	No
Systematic apprenticeship program	93% (14)	* (1)
No ("get-around + hire-leave policies")	76% (17)	75% (8)

*Too few cases for percentaging.

TABLE 5.7b.--Proportion of agreement by directors of units on the opinion, advisability of receiving most training in research outside the school of education, according to the existence of a program for training in research provided in the graduate institution and the existence of a systematic apprenticeship program provided in the research organization.

	Existence of a Training Program in the Graduate Institution	
Existence of a Training Program in the Unit that has Students	Yes (special + part of... degree program)	No
Systematic apprenticeship program	43% (14)	* (1)
No ("get-around + hire-leave policies")	18% (17)	25% (8)

*Too few cases for percentaging.

One will recall that the same direction of results exists for agreement by deans to the advisability of receiving most training in research outside schools of education, according to both the type of graduate preparation emphasized in the institution and the existence of a program for training in research provided by the parent organization (Table 3.8).

In general, directors of research organizations do not visualize relinquishing the training of educational researchers to another source outside the school of education. As with the analyses of the deans' responses, conflict about the issue does exist according to certain institutional characteristics. And, as stated previously, this conflict does not necessarily imply hindrance to the development of professional personnel in educational research. Rather the debate may intensify the efforts of both the parent organization and any of her sub-units to increase and maintain the resources for training in research. Furthermore, the debate may lead to redefining ways of increasing the joint efforts in the research of educational problems and of maintaining participation in the research with sources outside the school of education.

As stated previously in the overview of chapter three, there is support for the general conclusion that there may be a lack of opportunities for students to obtain experiences in research in the graduate institution of education. In analyzing the situation for research organizations, there seems to be relatively more opportunities available in research organizations. For example, 51 percent of all projects in research units have doctoral students working with them. However, only 42 percent of all projects being conducted outside any research unit in these same schools have graduate students with them. (Recall the data presented in Table 3.9.) And, if one considers that the question addressed to the director was limited to doctoral students in education, not graduate students, then it may be assumed that the difference of percentage between projects with students inside and outside of research units is larger. The mean proportion of research projects that have students with them per institutional setting is larger for the research organization: a mean proportion of 68.92 percent (52) of the projects per organization have doctoral students with them as compared to a mean proportion of 37.24 percent of the projects in the same schools outside the research organization. (If the research units that do not have any students with them are excluded, the mean proportion of research projects that have students with them per research organization is even larger: 79.64 percent (45).) The difference may be explained by a greater awareness of the possibilities of a "research environment" in research organization. In other words, their institutional settings perhaps make it relatively more easy for students to be aware of their existence and of the potential opportunity to gain experiences in research.

On the average, there are 8.29 doctoral students in education per research organization that are working on projects.* Almost a comparable mean number of doctoral students, 8.65 (49), use the data or facilities in the units in preparing their dissertations. (Since the question, concerning the number of doctoral students working with the projects and the number using the facilities for the dissertation were not limited exclusively to each of the two categories of students, it is assumed that the two categories do overlap.)

On the average, 3.65 (52) projects are conducted only by single investigators in the units. On the average, 3.04 (52) projects are conducted only by research teams in the units. The mean number of research projects being conducted that have students with them is 3.42 (52). Finally, the mean number of doctoral students in education per research project that has students is 1.93.** Thus, it seems that students associated with these projects do have a rare opportunity to gain experiences in research.

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*This mean number and other percentages or mean numbers that immediately follow refer only to the 55 research organizations that have students with them and that responded to the item(s) under consideration.

**Data represent both questionnaire items being answered: i.e., (1) the number of doctoral students with projects (406) and (2) the number of projects that have students with them (210).

Furthermore, the mean proportion of all doctoral students in the graduate institution of education that are with research units is 12.58 percent (43). It is noted, however, that in schools with more than one research unit, the proportion of the doctoral students in education that work with projects may vary, according to the units. For example, in one graduate institution one research unit represents one percent of the doctoral students, while another unit has 25 percent of the doctoral students. According to some of the case studies of certain research units that were done by the writer, certain institutional characteristics may differentiate units according to the proportion of doctoral students affiliated with the projects. Two such characteristics are: existence of a training program and affiliation in a department of the parent organization.

The figure, 12.58 percent, means that these organizations affect the training in research of a relatively small proportion of doctoral students. When one considers that only 35 percent of these units have a systematic apprenticeship program, then there is more evidence that only a very small proportion of doctoral students receive systematic efforts in training for research by the research organization.

One of the major problems is the lack of financial support available for training programs and stipends. Of the 53 that responded to the questionnaire item concerning funds earmarked for a training program or for courses and seminars offered by the unit, only nine (17 percent) check that such funds exist. Of the 18 units that have a systematic apprenticeship program, only one-third have earmarked funds. In a large measure, the situation will change because of the recent grants for training in research that are being provided by the United States Office of Education.

In some units doctoral students in education have the opportunity to interact with other doctoral students who are outside the school of education. These students either work with the projects being conducted in the unit or use the facilities of the unit for activities such as obtaining data for their dissertation. The mean number of doctoral students from other departments is 2.39 (51). The departments that this type of doctoral student represents are, among others, Psychology, Sociology, English, Political Science, and Mathematics.

Only in a very few research organizations do doctoral recipients remain in the organization where they received their training in research. Of the 49 units that provide information on this question, only 16 have doctoral students who worked in the unit in the past three years and remained after the receipt of the degree. A total of 31 students meet this criterion, or only .63 per research organization. This low figure raises the question of the unit's potential sustainment of research commitment through this one type of recruited personnel to the unit.

Another activity for training in research that the organizations provide is an academic program in methods and techniques of research. Almost one-half of the 55 units (47 percent) do offer either seminars or courses or both types of an academic program; almost one-third exclusively offer seminars. The range of major topics discussed in the seminars and courses covers the following areas: research related to a special field; the present research projects being conducted in the unit; research methodologies, such as experimental design and computer techniques; and a general review of research methods of other substantive fields and of the results of studies related to the field of education.

In most cases, credit for either the degree or certification is given; in sixty percent that offer a program, academic credit is also given. The range of people who conduct the seminars or courses includes, among others, professors inside and outside the school of education, the research unit's staff, and students working in the organization.

As may be expected, by far more units with a systematic apprenticeship program do have academic programs as compared to units without a training program: 72 percent (18) vs. 29 percent (34). Of the units that have an academic program, only 19 percent have funds earmarked for either a training program or the seminars and courses. Also, of the 13 units that have both a systematic apprenticeship program and courses or seminars, only five have funds earmarked for such activities. Again, one of the major problems in the research organization is the lack of financial support for activities for training in research.

Hence, it appears that research organizations and the parent organization may not have fully developed and used the organizations as centers for providing students in education the opportunities to obtain experiences in research.

Another difficulty visualized by directors is getting qualified students to work on projects in the unit. The range of problems seen by the 53 percent who checked the item includes, among others, lack of funds to support students, competition for better fellowship students, and lack of qualified students (such as, students who are full-time research assistants).

According to certain institutional characteristics, some differences occur on the level of agreement on the difficulties the director has experienced in obtaining qualified students to work on projects in the organization. For example, compared to directors of organizations that do not have doctoral recipients remaining in the organizations where they received their training, proportionately more of those who represent organizations that have this institutional input agree such difficulties have been experienced (69 percent vs. 52 percent). Proportionately more of those in units whose parent organizations have a closed level of admission attest to such difficulties (80 percent vs. 40 percent). Proportionately more of the directors who consider a part of their responsibilities is providing opportunities for students to participate in research affirm the existence of these difficulties (60 percent vs. 29 percent).

The above differences have two implications. First, there is the sheer reality of the problem. Second, the intensity of the problem seems greater for directors of units with organizational characteristics considered important for research activity and training. The issues will perhaps be further complicated as the pressures increase to reduce the time it takes to obtain the doctoral degree--for the more qualified students may be more inclined to accept fellowships which do not entail research experiences other than the dissertation. In light of some of the conflicts, there is need for redefining ways of recruiting students to research organizations and of effectively implementing the purposes for providing experiences in research.

The need expressed in the previous statement may be supported by observing another opinion by directors. The question addressed to the director concerns the problems, if any, that have arisen in coordinating the unit's training program with the graduate program in the school of education. Of the 37 directors responding to the item, 38 percent acknowledge that such problems have arisen. Some of the problems mentioned include, among others, lack of present resources in the unit, not enough research projects being performed in the unit, lack of interest on part of students to participate with research projects, and lack of time for students to work in the unit because of the requirements of the graduate program in the institution.

Again, when one considers the level of agreement by directors to this opinion, differences occur, according to certain institutional characteristics. For example, 41 percent of the directors of units with no training program acknowledge problems have arisen, while only 28 percent of the directors of units with a systematic apprenticeship program say that problems have arisen. In units with a low proportion of the doctoral students working on the projects, 29 percent agree to the item, while in units with a high proportion of doctoral students 50 percent of the directors agree. In units with a high proportion of the budget provided for research, only 29 percent of the directors agree to the item; in units with a low proportion, 47 percent of the directors state that problems have occurred. Finally, in units that belong to schools with a high proportion of doctoral students working for the Ph.D., only 29 percent of the directors state a conflict exists; in units whose graduate institutions represent a low proportion working for the Ph.D., 58 percent of the directors affirm the conflict. Again, data tend to support the need for graduate institutions and their research organizations to assess policies and procedures for providing opportunities for students to obtain training in research.

The final analyses of the emphasis on preparation for research by research organizations are the actual numbers of doctoral recipients who upon the receipt of the degree enter positions where much of their professional time is devoted to research and, secondly, the quality of the research done by these doctoral recipients. The first type of analyses, the doctoral recipients who immediately enter positions where research is the primary activity, is the concern of chapter five. Production of researchers by research organizations is defined as the proportion of doctoral recipients who worked in the unit during the past three years and upon the receipt of the degree immediately entered positions where research was the primary activity.[1]

According to the 49 units whose directors provided information for this institutional measure of output, only 29 units (59 percent) provided between one and 13 individuals, for a total of 113 doctoral recipients, that met the criterion for production of researchers. Stated another way, only 2.3 doctoral recipients per unit immediately entered positions where research was the primary activity.

The 113 doctoral recipients represent 26 percent of the total number who worked in the units over the past three years. Thirteen percent of the doctoral recipients entered positions in colleges and universities as researchers. The remaining 12 percent entered positions outside the setting of higher education; namely, school systems (2 percent), state departments (5 percent), and independent research agencies (5 percent). There are two striking facts evident in the above descriptive statistics. First, based on just the total number of individuals that worked in the units during the past three years, there seems strong evidence that research organizations are not being used rather predominantly by doctoral students in education as institutional settings for training in research--training that culminates in a career decision for full-time activity in research. Secondly, about half of the doctoral recipients undertook research as a primary activity in positions outside the academic community. Thus not only are research agencies outside the university competing effectively for research talent, but also the doctoral feedback for full-time research into higher education seems relatively small. On all accounts, it seems that higher education, in general, and the field of education, in specific, need to assess ways of increasing and sustaining efforts for preparing and retaining researchers in education within the research community of the university.

The following sections of chapter five examine, as a measure for the production of researchers by research organizations, the proportion of doctoral recipients over the past three years who worked in the unit and upon the receipt of the degree entered positions where research was the primary activity. This measure has been analyzed according to a number of organizational attributes of the research unit.

B. Production of Researchers According to Certain Organizational Characteristics

Before presenting the sections on the results for production of researchers, a brief explanation of the procedures is given.

As stated in the section on objectives and hypotheses, the institutional variables of the study represent both external and internal characteristics of the research organizations; namely, external characteristics of inputs, outputs, and environment and internal characteristics of social structure, attitudes, and activities. A listing of the 48 variables examined for the study may be found in Appendix D. Included in the listing is the exact wording of each questionnaire item on which the institutional variable has been operationally defined. Variables have been dichotomized (or trichotomized) according to the nominal value or computed median or approximate median case.

The test statistic used for analyses of data is the H-Test (145, pp. 436-438). The .05 level of significance is used. In Appendix D is a discussion of this technique.

According to a 48 x 48 matrix of institutional variables, significance for production of researchers by research organization occurs under 72 sets of conditions. A set means one institutional variable appears with another variable to yield significance. Of the 48 variables, 30 appear with another variable at least once to yield significance. Forty percent of the 72 sets of conditions are provided by three variables. Twenty-one percent are explained by five variables whose frequency of occurrence is three. Finally, 39 percent are provided by 22 variables whose frequencies for yielding significant sets of conditions are one or two.

Table 5.8 provides the data for the three institutional variables that may be considered relatively important in discussing production of researchers by research organizations.

TABLE 5.8.--The rank order of three variables that provide 40 percent of the 72 sets of conditions that yield significance for production of researchers by research organizations, according to the frequency of their occurrence.

Rank Order	Institutional Variable	Number of Times the H-Test Yields Significance for Production of Researchers
1.	An index of interdisciplinary students: existence in the unit of doctoral students from departments outside the school of education.	13
2.	An index of research quality for institutions to which research units belong.	9
3.	Existence of a program for training in research provided by the research organization.	7

According to the frequency of occurring with another variable, the next five variables that provide 21 percent of the sets of conditions have a frequency of three each. They include: doctoral recipients remaining in the organization where they received their training, proportion of funds financing research projects being conducted in the unit from governmental sources, an index of school services provided by the unit, a range of research topics on which research is being conducted, and the period of time in which research was the primary activity of the director. Although some of the five variables appear with some of the three major variables listed in Table 5.8, major attention is not given in the report to these five variables. (In Matrix D of Appendix D, the results of the H-Test are given for production of researchers, according to these variables and the remaining 40 institutional characteristics.)

A final note on the procedure for presenting the results concerns the tables. Data represented in the tables for production of researchers are based only on research organizations that have students with them and that provided information for the measure, production of researchers.

The three sections that follow present tables and discussion of of the production of researchers, according to two external and one internal characteristic that are considered relatively important for the development of professional personnel in educational research by research organizations.

1. Production of Researchers According to an Index of Research Quality for the Graduate Institution of Education to which the Research Organization Belongs

An index of research quality represents the deans' and research coordinators' assessment of which graduate institutions of education are doing the most competent and worthwhile research in education.

According to this external characteristic of research units and nine other organizational variables, significance for production of researchers by research organizations occurs. The other institutional characteristics include, among others, the type of legal control of the university, the level of facilitating research by the unit, an index of interdisciplinary students in the unit, and the existence of a program for training in research provided by the unit.

In the development of this section one will note differences for production of researchers as well as other organizational characteristics, according to this index of research quality. Similarly, there will be noted differences just between units that belong to institutions mentioned on the index, according to other institutional characteristics.

According to an index of research quality and the type of legal control of the university, significant results for production are yielded.

TABLE 5.9.--Mean proportion for production of researchers by research organizations according to an index of research quality and type of legal control.

	Index of Research Quality	
Type of Legal Control	Mentioned	Not Mentioned
Public	35.89 (18)	11.69 (16)
Private	22.64 (11)	12.75 (4)

As shown in Table 5.9, the more favorable direction for results is in units that belong to graduate institutions mentioned on the index.

Specifically, the research units of publicly controlled universities tend to have a higher mean proportion. This tendency may be explained by some of the following differences between these units representing publicly and privately controlled universities, according to a few selected organizational variables. Table 5.10 presents the data.

TABLE 5.10.--Comparisons between research units that belong to institutions mentioned on an index of research quality according to the type of legal control and organizational goals and activities for training in research.*

Institutional Characteristics	Type of Legal Control: Public	Type of Legal Control: Private
1. Existence of a systematic apprenticeship program provided by the unit:		
Yes	50% (18)	36% (11)
2. Proportion of doctoral students in education that work with projects being conducted in the unit:		
High (10-80%)	58% (12)	40% (10)
3. Former doctoral students who worked in the unit remain after graduation:		
Yes	46% (18)	27% (11)
4. Proportion of budget provided for research:		
High (>50%)	67% (15)	40% (10)
5. Graduate preparation emphasized by the institution:		
Research (alone plus others)	91% (11)	54% (11)
6. Proportion of doctoral students working for the Ph.D.: for all three degree-administering situations:		
High (25-100%)	85% (13)	36% (11)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to question are omitted from the computations.

As shown in Table 5.10, on a few selected variables, the units of publicly controlled institutions do tend, proportionately more, to have a systematic apprenticeship program, a high proportion of doctoral students working in the units, recent doctoral recipients remaining in the unit, and a monetary emphasis of research rather than of service. In units of both publicly and privately controlled universities, a proportionately comparable number of the parent organizations have a training program. In units of publicly controlled universities, proportionately more tend to emphasize a graduate preparation for research and to have a high proportion of doctoral students working for the Ph.D. Data tend to support the high mean production by units affiliated with institutions mentioned on the index and with publicly controlled universities.

Production of researchers is significant according to this index of research quality and two types of recruited personnel to the unit; namely, doctoral students in education and doctoral students who are from departments outside the school of education. Data in Table 5.11 indicate, again, that the more favorable direction of results is with units representing institutions mentioned on the index (see page 233).

The difference between the mean production by units of institutions mentioned on the index and the two levels for proportion of doctoral students in education working in the unit (45.00 percent vs. 23.45 percent) may be explained by some of the following differences on other organizational variables. For example, in units with a high proportion of doctoral students working in the unit, proportionately more have doctoral recipients remain in the organization where they received their training (64 percent vs. 18 percent). Compared to units

TABLE 5.11.--Mean proportion for production of researchers by research organizations according to an index of research quality and two institutional characteristics of inputs.

	Index of Research Quality	
Two Characteristics of Inputs	Mentioned	Not Mentioned
1. Proportion of doctoral students in education that work with projects in the unit:		
High (10-80%)	45.00 (11)	10.92 (12)
Low (0-9%)	23.45 (11)	11.83 (6)
2. An index of interdisciplinary students in the unit: presence of doctoral students in the unit who are not from the school of education:		
Yes	31.20 (15)	22.86 (7)
No	25.27 (11)	2.00 (11)

with a low proportion of doctoral students in education working in the organization, proportionately more have funds earmarked for a training program or seminars and courses provided by the organization (45 percent vs. 11 percent). Finally, proportionately more have a high proportion of the unit's budget provided for research (56 percent vs. 40 percent). In summary, this type of unit with a high proportion of doctoral students in education associated with the organization tends more to have organizational characteristics that highlight training arrangements for research. Thus, data lend support for the relatively high mean production of researchers by this type of unit.

As shown in part 2 of Table 5.11, the direction of the more favorable results is still in units whose parent organizations are mentioned on an index of research quality, whether the research organizations have doctoral students outside schools of education, or not (31.20 percent and 25.27 percent, respectively). Data tend to support the highest production by units with doctoral students outside schools of education, however. For example, in both types of units, a proportionately comparable number have the following characteristics: a high proportion of doctoral students in education working in the unit; doctoral recipients' remaining in the organization where they received their training; funds earmarked for training and academic programs provided by the unit; and a high proportion of funds financing projects from governmental sources. However, differences exist between the two types of organizations. In units that have doctoral students outside schools of education, proportionately more have these characteristics: a high index of interdisciplinary researchers on the staff (91 percent *vs.* 22 percent); a high proportion of the budget provided for research (77 percent *vs.* 25 percent); and a high level of facilitating the research of non-staff members (71 percent *vs.* 27 percent). Also, slightly more have a systematic apprenticeship program (47 percent *vs.* 36 percent). Only on one characteristic do they proportionately less represent units; namely, affiliation as the implied control on the unit (33 percent *vs.* 82 percent). Data tend to support the highest value being in the direction of the organizations with doctoral students outside schools of education and with their parent organizations mentioned on an index of research quality.

One will note in part two of Table 5.11 that two mean productions are rather comparable; namely, the production by units belonging to parent organizations mentioned on an index of research quality and having no index of interdisciplinary students (25.27 percent); and the production by units not belonging to parent organizations mentioned on the index and having an index of interdisciplinary students (22.85 percent).

Data lend evidence for the similarity of the two mean productions. For example, in both types of these organizations, a proportionately comparable number have a high proportion of doctoral students in education working in the unit and a high proportion of funds financing projects from governmental sources. Even if differences exist between the two types of organizations, there seems to be compensatory factors operating to equalize sufficiently the differences. For example, in units with the index of interdisciplinary students, proportionately less have the following characteristics: doctoral recipients' remaining in the units where they received their training (14 percent _vs._ 40 percent); funds earmarked for training or academic programs provided by the unit (14 percent _vs._ 30 percent); and affiliation as the implied control on the unit (28 percent _vs._ 82 percent). Slightly less have a high proportion of the budget provided for research (14 percent _vs._ 25 percent). However, in units with an index, proportionately more have these characteristics: a high index of interdisciplinary researchers on the staff (50 percent _vs._ 22 percent); a high level of facilitating the research of non-staff members (57 percent _vs._ 27 percent); and a systematic apprenticeship program (57 percent _vs._ 36 percent). Hence, data lend support to the assumption of compensatory factors operating; that is, where one type of unit is high on some characteristics considered important for arrangements for training in research, the other type is high on other characteristics. These compensatory factors plus the comparability of some characteristics tend to support the direction of the similar mean production.

In summary of the data shown in Table 5.11, further analyses of research characteristics present in the units lend support for the two relatively high productions by units affiliated with institutions mentioned on an index of research quality and having a high proportion of doctoral students in education who work on projects in the unit as well as an index of interdisciplinary students. Further analyses of research characteristics also lend support for the production to be rather favorable by units that have an index of interdisciplinary students and are not affiliated with institutions mentioned on the index.

Two internal characteristics of social structure and an index of research quality yield sets of significant conditions for production of researchers. The internal characteristics are the level of facilitating the research of non-staff members and a level of participation in research on the part of the faculty associated with the organization. (The latter variable is operationally defined as the proportion of the faculty in the research unit whose teaching load is reduced according to a full-time equivalent.) For both sets of conditions, the direction of results is still more favorable in units whose parent organizations are mentioned as doing the most competent and worthwhile research in education. Table 5.12 (page 237) presents the data according to the two sets of conditions.

For parts one and two of Table 5.12, comparing just the units whose parent organizations are mentioned on the index, one notes that the higher mean production exists in units that have a high level of facilitating the research of other faculty (39.13 percent *vs.* 22.58 percent) and that have a high level of participation in research by the faculty in the unit (41.54 percent *vs.* 26.22 percent).

TABLE 5.12.--Mean proportion for production of researchers by research organizations according to an index of research quality and two internal characteristics of social structure.*

Characteristics of Social Structure	Index of Research Quality	
	Mentioned	Not Mentioned
1. Level of facilitating research by the unit: proportion of the faculty in the unit that are not staff members but have their research facilitated by the unit:		
High (1+%)	39.13 (15)	12.08 (12)
Low (0%)	22.58 (12)	11.62 (8)
2. Level of participation in research by the faculty in the unit: proportion of the faculty in the unit whose teaching load is reduced according to a full-time equivalent:		
High (16-75%)	41.54 (13)	14.20 (10)
Low (0-15%)	26.22 (9)	8.88 (8)

*Numbers in parentheses represent the base for mean proportions and vary because non-respondents to questions are omitted from the computations.

There are data that lend support for the direction of results to be in these two types of units. For example, in units that facilitate research, proportionately more have an index of interdisciplinary students in the unit and a systematic apprenticeship program. This type of unit may attract students whose professors have their research facilitated by the unit. In turn, these professors serve as role models for the student. This factor coupled with a training program provided by the unit may yield the higher mean production. In units that have a high level of participation in research, proportionately more have a high proportion of the unit's budget provided for research and a high proportion of doctoral students in education working on the projects in the unit. Although in this type of unit proportionately less have a systematic apprenticeship program, perhaps the student-involvement with professors who work almost as "full-time" researchers in the unit suggests two factors for training in research. First, according to this type of unit, students may be affiliated with the unit through the influence of a professor who is conducting a large research project that necessitates a high proportion of his professional time. Thus, even if no training program exists in this type of unit, reinforcement for career decisions in research may be obtained through involvement in this type of experience in research and with this type of role model.

Production of researchers is significant, according to an index of research quality and the proportion of projects being conducted in the unit that have students with them.

TABLE 5.13.--Mean proportion for production of researchers by research organizations according to an index of research quality and the proportion of projects being conducted in the unit that have doctoral students with them.

	Index of Research Quality	
Proportion of Projects that Have Students	Mentioned	Not Mentioned
High (100%)	27.60 (20)	16.00 (6)
Low (0-99%)	50.60 (5)	8.60 (10)

As shown in Table 5.13, the direction of the more favorable results is again in units affiliated with institutions mentioned on the index. However, the higher mean production is not in units with a high proportion of projects being conducted that have students; it is where a low proportion have students with them (50.60 percent vs. 27.60 percent).

There are too few cases in the latter type of organization for percentaging differences on other organizational variables between the two types of research units. In general, both types have comparable clusters of organizational variables considered important for training arrangements in research. For example, both types are well represented by a systematic apprenticeship program in the unit, a high research index of interdisciplinary relations, a high level of facilitating the research of non-staff members, and non-affiliation as the implied control on the unit.

Why then is the mean production higher by organizations that do not have students on all projects being conducted in the unit? One explanation lies in the effects of having too many students associated with the organization at a given time. Generally, slightly more units that have students working on all projects conducted in the unit represent a high proportion of doctoral students in education working in units (55 percent vs. 45 percent). Data also indicate that a high proportion of doctoral students in education exists more in units that have students working with all projects performed in the unit and that are affiliated with institutions mentioned on the index. Thus, units with a large "volume" of student activity may reach points of diminishing returns for integrating and individualizing the experiences in research that are offered the students. Consequently, reinforcement of career decisions for full-time activity in research may not be sustained in such an environment.

The period of time in which research was the primary activity of the director and an index of research quality yield significant results. Table 5.14 presents an unexpected trend of results.

TABLE 5.14.--Mean proportion for researchers by research organizations according to an index of research quality and the period of time in which research was the primary activity of the director of the unit.

	Index of Research Quality	
Period of Time Devoted to Research	Mentioned	Not Mentioned
Long (> 24 months)	28.94 (18)	5.80 (10)
Short (0-24 months)	34.00 (11)	18.00 (10)

As shown in Table 5.14, although the more favorable results again are with units of institutions mentioned on the index, the direction of the higher mean production is in units whose directors have had a short period of time in which research was the primary activity. Even for units of institutions not mentioned as doing the most competent and worthwhile research, the mean production is relatively high for units where the director has had a short period of time devoted to research.

There are data that lend support for the trend of results. According to at least two organizational variables, the two types of directors are distinguished; namely, the existence of a training program in the organization and the level of facilitating the research of non-staff members. In units whose directors have had a long period of time devoted primarily to research, proportionately less have a systematic apprenticeship program and a high level of facilitating research. Comparing just the units affiliated with institutions mentioned on the index, the same trend exists; that is, in units whose directors have had a short period of time devoted primarily to research, proportionately more have a systematic training program (64 percent _vs._ 33 percent) and do facilitate the research of non-staff members (77 percent _vs._ 44). (As one will recall from data shown in Table 5.12, more favorable results for production are in the direction of units that do facilitate research.) These data tend to support the direction of results for the mean productions shown in Table 5.14.

Data are available which may indicate that one of the dynamics operating to differentiate the two types of directors is a conflict of research interests; namely, the interest to continue to perform one's own research interest _versus_ the interest to create arrangements for training in research or research activity by others. Data shown in the two following tables indicate the trend of results, according to the time-period devoted primarily to research and some organizational variables. Table 5.15a shows the location of the two types of directors according to the organizational combination of the two social structures, implied control on the unit and a level of facilitating the research of non-staff members.*

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*It is noted that significant results for production do not occur, according to the type of implied control on the unit and the level of facilitating the research of non-staff members.

TABLE 5.15a.--Proportion of directors of research organizations according to the period of time in which research was the director's primary activity and the organizational combination of two social structures of the research unit.

Organizational Combination of Two Social Structures		Period of Time Devoted to Research	
Affiliate with a department	Facilitate the research of non-staff members	Long (>24 months)	Short (0-24 months)
Yes	Yes	10%	26%
Yes	No	33	13
No	Yes	33	43
No	No	23	17
		99%	99%
		(30)	(23)

As shown in Table 5.15a, proportionately more units that represent the combination of non-affiliating and facilitating units have directors that had a short period of time devoted primarily to research (43 percent vs. 33 percent). The largest percent difference exists in units with the organizational combination of affiliation and non-facilitation (33 percent vs. 13 percent). In this type of unit proportionately more have directors whose period of time devoted primarily to research activity was long. The conflict of interests expressed perhaps by the director of this type of unit is the desire more to pursue his own interests of research activity and projects than to create arrangements for facilitating the research of non-staff members of the unit.

Another variable differentiating the two types of directors is the type of program for training in research provided by the organization. Since this characteristic is relatively important for explaining production of researchers by the organization, insights may be provided for the different mean production by units whose directors represent varying time-periods in which research was their primary activity. Table 5.15b presents the direction of results, according to the director's time-period devoted primarily to research and the research organization's type of training program.

TABLE 5.15b.--Proportion of directors of research organizations according to the period of time in which research was the director's primary activity and the type of program for training in research provided by the research unit.

Type of Program for Training in Research	Period of Time Devoted to Research	
	Long (>24 months)	Short (0-24 months)
Systematic Apprenticeship Program	29%	43%
"Hire-leave policy"	39	22
"Get-around policy"	32	35
	100%	100%
	(28)	(23)

As shown in Table 5.15b, proportionately more of the directors who have had a short period of time devoted to research represent research organizations that provide systematic apprenticeship programs: 43 percent vs. 29 percent. Proportionately more directors with more than 24 months devoted primarily to research represent units that have a "hire-leave policy" (percent difference of 17). Directions of results tend to support the assumption that directors with a long period of time devoted to research may experience some conflict of interests: the desire to pursue their own research versus the interest to provide systematic apprenticeship programs.*

The final institutional variables that appear with an index of research quality for the parent organization to yield significant results are two activities for research training. They include the existence of an academic program (seminars or courses) for which credit is given and the existence of a program for training in research provided by the organization. Table 5.16 presents data for the set of variables, an index of research quality and academic credit given for the program provided by the organization.

TABLE 5.16.--Mean proportion for graduation of researchers by research organizations according to an index of research quality and academic credit given for an academic program provided by the research unit.

	Index of Research Quality	
Academic Credit Given the Academic Program Offered by the Unit	Mentioned	Not Mentioned
Yes	25.00 (11)	31.75 (4)
No	46.00 (6)	0.00 (4)
No Academic Program	28.67 (12)	8.09 (11)

As shown in Table 5.16, given academic credit for the academic program offered by the unit, mean productions are comparable for units belonging to institutions mentioned and not mentioned on the index (25.00 and 31.75 percent). Although too few cases exist for making comparisons, almost all units not belonging to institutions mentioned on the index have this cluster of research characteristics: a high index of interdisciplinary researchers, an index of interdisciplinary students, the facilitation of the research by non-staff members, and a systematic apprenticeship program. Thus, offering academic credit in this type of unit may increase student-involvement with the research activities of the unit as well as provide some reinforcement for future commitment to research by the student.

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*According to the period of time devoted primarily to research by the director and the type of training program provided by the unit, significance for production does not occur.

Analyses of other characteristics present in the three types of units representing institutions mentioned on the index may explain the mean productions by these units. Compared to units that either offer credit or have no program, proportionately more of the units that offer no credit (and yield the highest mean production) have these characteristics: a high proportion of doctoral students in education working in the unit; doctoral recipients remaining in the unit where they received their training; an index of interdisciplinary students; and a high proportion of the unit's budget designated for research. Table 5.17 (page 246) presents data for comparisons of these units.

Data presented in Table 5.17 indicate the comparability and dissimilarity of these units according to certain variables. However, considering these institutional inputs and activities as a cluster of characteristics favorable for production, it seems that comparability of research characteristics exists for the units that give credit and that do not offer an academic program. Thus, as noted in Table 5.16, there is a similarity of the mean production for researchers by these two types of units.

TABLE 5.17.--Comparisons between research organizations belonging to institutions mentioned on an index of research quality, according to academic credit given for programs offered by the unit and certain organizational inputs and activities.*

	Academic Credit Offered		
Institutional Variables	No	Yes	No Academic Program
1. Proportion of doctoral students in education that work in the unit:			
High (10-80%)	** (4)	67% (9)	11% (9)
2. Existence of doctoral students from departments outside the school of education:			
Yes	** (5)	45% (11)	54% (11)
3. Former doctoral students who worked in the unit remain after graduation:			
Yes	67% (6)	45% (11)	17% (12)
4. Index of interdisciplinary researchers on the staff:			
High (1+%)	** (4)	44% (9)	70% (10)
5. Proportion of the budget provided for research:			
High (>50%)	83% (6)	38% (8)	54% (11)
6. Index of school services provided by the unit:			
Low (0-45%)	** (5)	64% (11)	67% (12)
7. Existence of a systematic apprenticeship program:			
Yes	** (4)	82% (11)	17% (12)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

**Too few cases for percentaging. Recall first paragraph preceding the table for distribution of the cases for this type of organization.

As stated previously, the existence of a program for training in research and an index of research quality yield significant results. The more favorable results are in units belonging to institutions mentioned on the index. Even if organizations are not affiliated with institutions mentioned on the index, having a systematic apprenticeship program does tend to yield a relatively high production of researchers. Table 5.18 provides the mean productions.

TABLE 5.18.--Mean proportion for production of researchers by research organizations according to an index of research quality and the existence of a program for training in research provided by the research unit.

	Index of Research Quality	
Existence of a Training Program	Mentioned	Not Mentioned
Systematic apprenticeship program	29.38 (13)	16.00 (4)
No ("get-around + hire leave policies")	23.94 (16)	8.92 (13)

Data shown in Table 5.18 indicate the relative importance of the institutional characteristic, a program for training in research. According to the existence of a training program, units of institutions mentioned on the index differ on other variables besides the institutional output of researchers. Comparisons of just the units representing institutions mentioned on the index show: slightly more of the units with a training program have a high proportion of doctoral students in education working with the unit's projects (72 percent vs. 27 percent); slightly more have an index of interdisciplinary students (64 percent vs. 53 percent). Proportionately more have former doctoral students who worked in the unit remain after graduation (54 percent vs.

25 percent) and have funds earmarked for training programs or courses offered by the unit (38 percent vs. 8 percent). Proportionately more of the units with training programs are affiliated with a department or special program within the institution (54 percent vs. 44 percent) as well as facilitate research of non-staff faculty (64 percent vs. 50 percent). As may be expected, proportionately more have a high index of an interdisciplinary staff (75 percent vs. 50 percent). Both types of units have about the same proportion for a high index of interdisciplinary relations and a high research index of interdisciplinary relations. Data tend to support, however, that, in units with a training program, a more favorable cluster of organizational arrangements for research activity and training does exist.*

In summary of this section, significance for production of researchers occurs according to an index of research quality and nine other organizational variables. They include: type of legal control; proportion of doctoral students in education that work with projects in the unit; an index of interdisciplinary students in the unit; level of facilitating research by the unit; level of participation in research by the faculty in the unit; proportion of projects being conducted that have students with them; period of time in which research was the primary activity of the director; academic credit given for the program provided by the unit; and the existence of a program for training in research provided by the research organization.

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*In units with no training program, proportionately more have a high proportion of their staff whose teaching load has been reduced according to a full-time equivalent (73 percent vs. 45 percent). The conflict of interests that has been previously discussed may be existing for this type of organizational setting; that is, the interest of the staff to perform their own research versus the interest to devote time for the research training of students.

The more favorable results for production tend to be in units belonging to institutions mentioned on an index of research quality. There are some data that lend support for the direction of results. For example, proportionately more units belonging to institutions mentioned on the index have these characteristics: an index of interdisciplinary students, doctoral recipients remaining in the units where they received their training, a high index of interdisciplinary researchers on the staff, earmarked funds for training or academic programs provided by the unit, a high research index of interdisciplinary relations, and a systematic apprenticeship program provided by the unit. However, it is noted that the direction of results tends to be favorable for units not belonging to institutions mentioned on the index, if the units do have doctoral students from departments outside the school of education and a systematic apprenticeship program. As one will recall, these two organizational variables are considered relatively important for production of researchers.

The next section presents the results for production of researchers according to an index of interdisciplinary students in the unit and other institutional characteristics.

2. Production of Researchers According to an Index of Interdisciplinary Students in the Research Organization

The external characteristic of the input, an index of interdisciplinary students in the unit, refers to the presence or absence of doctoral students from departments outside the school of education.

As one will recall from the overview, on the average, there are 2.39 doctoral students per research unit with students that represent departments outside the school of education.

The inclusion of this item in the questionnaire survey was based on the assumption that, where units had this type of student, other characteristics favorable for a research environment and for production of researchers might be evident. Such an assumption tends to be supported. According to this index and 13 other organizational variables, production of researchers by research organizations is significant. The other characteristics include, among others: an index of research quality; the institutional input of earmarked funds for training programs; an index of school services provided by the unit; and the existence of a program for training in research. (Recall that discussion of the results, according to an index of research quality and an index of interdisciplinary students, has already been presented: Table 5.11.) In the development of this section one will observe differences not only for production of researchers but also for other organizational characteristics considered important for arrangements for research activity and training.

Units that have and do not have doctoral students outside the school of education represent proportionately about the same number of units with a high proportion of doctoral students in education that work with the unit. However, in units with an index of interdisciplinary students, proportionately more have a high index of interdisciplinary researchers on the staff. The influence of this type of staff may account for the presence of students outside the school of education. Table 5.19a provides comparisons between research organizations, according to an index of interdisciplinary students in the unit and other organizational inputs.

TABLE 5.19a.--Comparisons between research organizations according to an index of interdisciplinary students in the unit and institutional characteristics of inputs.*

Institutional Characteristics	Index of Interdisciplinary Students	
	Yes	No
1. Proportion of doctoral students in education that work in the unit:		
High (10-80%)	56% (18)	60% (20)
2. Former doctoral students who worked in the unit remain after graduation:		
Yes	32% (22)	27% (22)
3. Index of interdisciplinary researchers: proportion of bureau staff that represent faculty outside the school of education:		
High (1+%)	72% (18)	20% (20)
4. Proportion of the budget provided for research:		
High (> 50%)	62% (21)	33% (15)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

According to an index of interdisciplinary students and the variable, doctoral recipients remaining in the organizations where they received their training, significant results occur. There are two versions of this institutional input.* For both versions, significance occurs. Although the computed H-value is not significant for production according to this index and the proportion of doctoral students in education that work in the unit, the value, 7.62, is relatively close to the .05 level. The mean productions are given also for this set of institutional conditions in Table 5.19b (page 253).

Data shown in part one of Table 5.19b indicate that, given a high or a low proportion of doctoral students in education working in the unit, organizations with an index of interdisciplinary students have favorable productions (38.40 percent and 25.00 percent). Mean productions are similar by units with no index of interdisciplinary students and a high proportion of doctoral students in education and by units with an index of interdisciplinary students and a low proportion of doctoral students in education (25.00 percent and 18.50 percent). Two institutional characteristics may explain the relative similarity: an index of research quality and the provision of a systematic apprenticeship program in the unit. Each type has a comparable number of units that are affiliated with parent organizations mentioned on the index and that provide a training program. (Proportionately, slightly

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*One version is trichotomized, accordingly: High (≥ 1), low (0), and does not apply to our situation. Some directors noted in their response to the item a "0" rather than "does not apply." It might be assumed that, although they had no doctoral recipients during the past three years remain in the organization where they received their training, the units do permit such a policy. Thus, the emphasis of version one of the variable is more on the implied policy of the unit concerning former doctoral students remaining in the unit. Version two of the variable has emphasis on whether any former doctoral student who worked in the unit remained in the unit after graduation.

TABLE 5.19b.--Mean proportion for production of researchers by research organizations according to an index of interdisciplinary students in the unit and two kinds of personnel recruited by the unit.*

Kinds of Personnel Recruited		Index of Interdisciplinary Students: Yes	Index of Interdisciplinary Students: No
1. Proportion of doctoral students in education that work with projects in the unit:**			
	High (10-80%)	38.40 (10)	18.50 (12)
	Low (0-9%)	25.00 (8)	7.25 (8)
2. Former doctoral students who worked in the unit remain after graduation:			
Version 1:	High (≥ 1)	38.14 (7)	32.33 (6)
	Low (0)	32.29 (7)	2.00 (10)
	Does not apply to situation	12.50 (8)	14.33 (6)
Version 2:	Yes (≥ 1)	38.14 (7)	32.33 (6)
	No (0 + DNA)	24.07 (15)	6.62 (16)

*Numbers in parentheses represent the base for mean proportions and vary because non-respondents to questions are omitted from the computations.

**With 3 d.f. the computed H-value, 7.62, is not significant at the .05 level.

more of the former type represent, however, the characteristics. This may explain the slightly higher mean production.) Generally, both an index of interdisciplinary students and a high proportion of doctoral students in education that work in the unit indicate the presence of other institutional characteristics considered important for arrangements for research activity and training.

According to part three of Table 5.19b, data show that, given doctoral recipients remaining in units where they received their training, mean production is comparable by units with and without an index of interdisciplinary students (38.14 percent and 32.33 percent). As stated in the overview, it appears that recruiting to the unit's staff former students who worked in the unit serves two purposes. First, units would maintain researchers within the academic environment. Secondly, this type of personnel serves in many ways as role models in training a new generation of researchers.

Significant results occur according to an index of interdisciplinary students and two types of financial inputs; namely, financial support of projects performed in the unit by governmental sources and funds earmarked for training on academic programs provided by the unit. Table 5.19c gives the data for mean productions, according to the two sets of institutional inputs (see page 255).

As shown in part one of Table 5.19c, given a high proportion of funds from governmental sources that finance research projects, mean productions are relatively comparable by units with and without an index of interdisciplinary students (39.30 percent and 30.29 percent). Part two of Table 5.19c indicates the same trend of results occurs;

TABLE 5.19c.--Mean proportion for production of researchers by research organizations according to an index of interdisciplinary students in the unit and two economic resources available in the unit.*

Two Inputs: Economic Resources Available	Index of Interdisciplinary Students: Yes	Index of Interdisciplinary Students: No
1. Proportion of funds that financed proposals originating with and done by researchers in in the unit by the source: state and federal government:		
High (51-100%)	39.30 (10)	30.29 (7)
Low (0-50%)	19.86 (7)	4.60 (10)
2. Funds earmarked for training or academic programs provided by the unit:		
Yes	34.75 (4)	35.00 (4)
No	28.76 (17)	8.89 (18)

*Numbers in parentheses represent the base for mean proportions and vary because non-respondents to questions are omitted from the computations.

that is, given funds earmarked for training or academic programs provided by the unit, mean productions are similar by units with and without an index of interdisciplinary students (34.75 percent and 35.00 percent). (Even without earmarked funds for programs provided by the unit, the mean production by units having an index of interdisciplinary students is rather similar to the two mentioned previously.) According to the results, it appears that the availability and allocation of funds for research activity and training tend to differentiate the level for production of researchers by organizations. However, even if a high proportion of funds is not available from certain outside sources and even if funds are not earmarked for programs provided by the unit, mean production is still relatively high by organizations that have an index of interdisciplinary students. Data on other organizational characteristics that are present in this type of unit tend to support a favorable situation for production of researchers; one such characteristic highly represented in this type of unit is a systematic apprenticeship program provided by the unit.

Proportionately more units with doctoral students outside schools of education have a low index of school services provided by the unit, a high index of interdisciplinary relations as well as a high research index of interdisciplinary relations. Table 5.20a (page 257) presents the data.

According to an index of interdisciplinary students in the unit and the institutional output, school services provided by the unit, significance occurs. However, the mean production, as might be expected, is not the highest value by units with a low index of school services provided by the unit and an index of interdisciplinary students in the unit. Mean productions are very similar for units with a high index of school services provided by the unit and doctoral students outside schools of education (38.38 percent) and for units with no index of interdisciplinary students in the unit and a low index of school services (32.62 percent). Table 5.20b (page 257) presents the data for this set of conditions.

TABLE 5.20a.--Comparisons between research organizations according to an index of interdisciplinary students in the unit and external characteristics of an output and environment.*

Institutional Characteristics		Index of Interdisciplinary Students	
		Yes	No
1. Index of school services provided by the unit:	Low (0-45%)	62% (21)	26% (22)
2. Index of interdisciplinary relations:	High (3-12)	76% (21)	33% (18)
3. Research index of interdisciplinary relations:	High (1-6)	81% (21)	39% (18)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

TABLE 5.20b.--Mean proportion of production of researchers by research organizations according to an index of interdisciplinary students in the unit and an index of school services performed by the unit.

Index of School Services	Index of Interdisciplinary Students	
	Yes	No
High (46-100%)	38.38 (8)	2.79 (14)
Low (0-45%)	21.07 (13)	32.62 ([illegible])

Comparisons between the two types of units that have the comparable mean productions, shown in Table 5.20b, yield both similarities and difference between these two types of units. Furthermore, it appears that, where one type has proportionately more represented on one variable, the other type has proportionately more represented on another characteristic considered important for arrangements in research training. Thus, compensatory factors may be operating to equalize sufficiently the differences between the two types of units and thus to yield similar mean productions. For example, there are similarities between the two types of organizations. Both proportionately have a comparable number of units representing: a high proportion of doctoral students in education working on projects in the organization; doctoral recipients remaining in the units where they received their training; and a high proportion of funds financing projects from governmental sources. Differences between the two types of units also occur. For example, in units having a low index of school services and no doctoral students outside the school of education, proportionately more are affiliated with institutions mentioned on an index of research quality (80 percent *vs.* 50 percent); and have funds earmarked for programs provided by the unit (38 percent *vs.* 12 percent). In units with a high index of school services provided by the organization and doctoral students from other departments, proportionately more have a systematic apprenticeship program (62 percent *vs.* 43 percent); and have a high index of interdisciplinary researchers on the staff (71 percent *vs.* 14 percent). Data thus tend to support the assumption that compensatory plus comparable factors operate to equalize sufficiently the differences between the units and to yield similar mean productions.

Comparisons just between the two types of organizations (in Table 5.20b) that have a low index of school services provided by the research unit show differences on other characteristics besides their institutional output of researchers. The differences tend to support the higher mean production by the organizations providing a low index of school services and having no doctoral students from other departments (32.62 percent vs. 21.07 percent). For example, in this type of organization, proportionately more have the following characteristics: a high proportion of doctoral students in education working in the unit (57 percent vs. 44 percent); doctoral recipients remaining in the units where they received their training (38 percent vs. 23 percent); and funds earmarked for programs provided by the unit (38 percent vs. 27 percent). The one characteristic that the two types of organizations with a low index of school services provided by them do have in common is a systematic apprenticeship program provided by the unit. In summary, it seems that having just a low index of school services provided by the unit and an index of interdisciplinary students in the unit do not necessarily yield a trend for higher institutional output of researchers. In other words, a cluster of organizational variables considered important for arrangements for research activity and training must also be present.

Finally, comparisons just between the two types of organizations with a high index of school services are in order. Only on two organizational variables are the two types of units comparable; namely, a high proportion of doctoral students in education working in the organization and funds earmarked for programs provided by the unit.

After that, compared to organizations with no doctoral students outside the school of education, proportionately more of the units with an index of interdisciplinary students have the following characteristics: doctoral recipients remaining in the units where they received their training (38 percent vs. 21 percent); a high proportion of funds financing projects from governmental sources (57 percent vs. 25 percent); a high proportion of the unit's budget provided for research (50 percent vs. 40 percent); a high research index of interdisciplinary relations (71 percent vs. 31 percent); and a systematic apprenticeship program (62 percent vs. 9 percent). In this type of unit proportionately more also are affiliated with institutions mentioned on an index of research quality (50 percent vs. 29 percent). Data tend to support the following assumptions. If research organizations that provide a high index of school services desire at the same time a high institutional output of researchers, then arrangements for research activity and training for the students must be insured. If such arrangements do not exist, then it may follow that students affiliated with such organizations may not perceive the institutional setting as a center for obtaining experiences in research--experiences culminating in a career decision for research as the primary activity.

Proportionately more units with no doctoral students outside schools of education are affiliated with a department or a special program within the graduate institution of education. However, proportionately less represent a facilitating research organization. Organizations with and without an index of interdisciplinary students represent proportionately about the same number of units that have a high proportion of their staff's teaching load reduced according to a full-time equivalent. Table 5.21a presents data on these three social structures of the unit, according to an index of interdisciplinary students in the organization.

TABLE 5.21a.--Comparisons between research organizations according to an index of interdisciplinary students in the unit and institutional characteristics of social structure.*

Institutional Characteristics	Index of Interdisciplinary Students: Yes	Index of Interdisciplinary Students: No
1. Implied control on the unit:		
Affiliated with a department...	32% (22)	64% (22)
2. Facilitating research of faculty who are not members of the unit:		
Yes	71% (21)	36% (22)
3. Level of participation in research by the staff: proportion of faculty in the unit whose teaching load is reduced according to a full-time equivalent:		
High (16-75%)	53% (19)	56% (18)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

Significance for production does not occur, according to the type of implied control on the unit and the level of facilitating research of non-staff members. Nor does it occur, according to an index of interdisciplinary students in the unit and either the level of facilitation by the unit or the level of participation in research by the staff.

The organizational variables, an index of interdisciplinary students in the unit and the type of implied control on the unit, do yield significant results. The direction of the more favorable results is in units having doctoral students outside the school of education. Table 5.21b presents the mean productions for this set of conditions.

TABLE 5.21b.--Mean proportion for production of researchers by research organizations according to an index of interdisciplinary students in the unit and the type of implied control on the unit.

Implied Control: Unit Affiliated with a Particular Department...within the Institution	Index of Interdisciplinary Students	
	Yes	No
Yes	34.43 (7)	21.43 (14)
No	25.80 (15)	0.00 (8)

As shown in Table 5.21b, the highest mean production is by units with doctoral students outside the school of education and an affiliation with some department or program within the graduate institution (34.43 percent). This type of unit does differ from the type of unit having also an affiliation within the parent organization and no index of interdisciplinary students in the unit. The differences on other organizational variables present in these two types of units tend to support the mean production being somewhat lower by units that have no index of interdisciplinary students and have affiliation as the implied control on the unit (21.43 percent). For example, in units yielding the higher mean production of researchers, proportionately more have the following characteristics: earmarked funds for training or academic programs provided by the unit (43 percent vs. 14 percent); a high level of facilitating the research of non-staff members (57 percent vs. 28 percent); and a systematic apprenticeship program provided by the unit (57 percent vs. 31 percent). The two types of units are similarly represented on two organizational variables; namely, an index of research quality and doctoral recipients remaining in the unit where they received their training. The cluster of characteristics seem more favorable for units with both an affiliation and an index of interdisciplinary students. Two variables may be operating sufficiently to yield the higher mean production; namely, the systematic apprenticeship program and the high level of facilitating research. According to both characteristics, reinforcement for career decisions for full-time research may be evident. Rationale is two-fold. First, having a training program in a unit affiliated with a special program or department within the parent organization may insure involvement in the unit by students whose major area is in that special program or department. Second, students whose major professor's research is facilitated by the unit may become involved not only in the research activities of the unit but also in his professor's research. The interplay of these environmental conditions may sustain future commitment to research as a full-time activity on the part of the students.

As shown in Table 5.21b, two types of units have comparable mean productions: units with affiliation as the implied control on the unit and with no index of interdisciplinary students in the unit (21.43 percent) versus units with doctoral students outside the school of education and non-affiliation as the implied control on the unit (25.80

percent). Data tend to support that, where one type is proportionately more represented on an organizational variable, the other type has proportionately more represented on another characteristic considered important for arrangements in research training. Thus, a balancing effect may be operating to equalize sufficiently the differences between the two types of units and thus to yield similar productions. For example, in both types of units, a proportionately comparable number are affiliated with graduate institutions mentioned on an index of research quality, have a high proportion of funds financing projects from governmental sources, and have earmarked funds for programs provided by the unit. In units with affiliation as the implied control and with no index of interdisciplinary students, proportionately more, as expected, have a high proportion of doctoral students in education working in the unit (62 percent _vs._ 38 percent). However, in this type of unit, proportionately less have a systematic apprenticeship program (31 percent _vs._ 47 percent) and a high level of facilitating the research of non-staff members (28 percent _vs._ 78 percent).

Perhaps two rather distant operations are occurring in these two types of units. In units with only students in education and an affiliation with a department or special program of the parent organization, more than likely most students associated with these units represent the area of specialization with which the unit is also affiliated. Thus, the student's involvement in the research activities of the unit and future commitment to a career decision for research as a full-time activity may be developed as a result of his "commitment" to his area or a related area of specialization. However, in units with an index of interdisciplinary students and no affiliation with a special department or program, more than likely many students may affiliate with the organization through the influence of a professor whose research is being facilitated by the unit. Since 78 percent of these units have a high index of interdisciplinary researchers on the staff, the influence of an academic discipline of the graduate faculties is also present in these units. Thus, the student's involvement in the research activities of the unit and commitment to a career decision for full-time activity in research may be developed as a result of the influence of his role model, the professor with whom he works. Further investigation is needed to differentiate if, in fact, the two implied influences for affiliating with research organizations do exist. Also, further investigation is needed to develop the nuances of the situation on role models in the organizations as related to a student's future commitment to research as a full-time activity.

According to an index of interdisciplinary students in the unit and several characteristics of the parent organizations, research units differ. For example, in units having doctoral students outside schools of education proportionately more belong to institutions with these characteristics: emphasis of the graduate preparation for research; a high research index of interdisciplinary relations; and a mention on an index of research quality. (As one will recall, according to the latter institutional variable and this index of interdisciplinary students in the unit, production of researchers is significant.) Table 5.22a presents differences between organizations, according to an index of interdisciplinary students in the unit and institutional characteristics of the parent organizations to which research organizations belong.

TABLE 5.22a.--Comparisons between research organizations according to an index of interdisciplinary students in the unit and organizational characteristics of the graduate institutions of education to which research units belong.*

	Index of Interdisciplinary Students	
Organizational Variables	Yes	No
1. Proportion of doctoral students working for the Ph.D.: for all three degree-administering situations: High (25-100%)	80% (15)	42% (19)
2. Index of required interdisciplinary courses: High (2+)	91% (11)	46% (13)
3. Type of graduate preparation emphasized: Research (alone + others)	75% (16)	35% (17)
4. Research index of interdisciplinary relations: High (1-4)	89% (18)	76% (17)
5. Existence of a program for training in research: Yes (special + part of... degree program)	100% (17)	67% (18)
6. Primary responsibility of the graduate faculty is research: based on the dean's estimate of three groups in the graduate institution of education: High (1-3)	53% (17)	47% (17)
7. Index of research quality: Mentioned	68% (22)	50% (22)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

An index of interdisciplinary students and each of three characteristics of the parent organizations yield significant results for production. The three institutional variables are the type of graduate preparation emphasized in the institution, the existence of a training program provided by the graduate institution,* and research as the primary responsibility of the graduate faculty in education. The mean productions, according to these three sets of conditions, are given in Table 5.22b (page 268).

The procedure for discussing data shown in Table 5.22b is to consider each set of conditions separately.

As shown in part one of Table 5.22b, the direction of the more favorable results is in units with doctoral students outside schools of education. The mean productions, according to this variable, are comparable for units belonging to institutions emphasizing graduate preparation for both research and non-research (35.17 percent and 30.25 percent, respectively). There are too few cases for percentaging differences on other organizational characteristics between the two types of units that have an index of interdisciplinary students in the unit. In general, for each type of unit, there is above average representation on each of the following characteristics: doctoral recipients remaining in the organizations where they received their training; a high index of interdisciplinary researchers on the staff; a high proportion of funds financing projects from governmental

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*One of the k samples has no cases, according to this set of conditions; thus there are 2 d.f. Even with 3 d.f., the computed H-value, 8.39, is still significant at the .05 level.

TABLE 5.22b.--Mean proportion for production of researchers by research organizations according to an index of interdisciplinary students in the unit and three characteristics of the graduate institution of education.*

Characteristics of the Parent Organization	Index of Interdisciplinary Students: Yes	Index of Interdisciplinary Students: No
1. Type of graduate preparation emphasized:		
Research (alone plus others)	35.17 (12)	17.83 (6)
Non-research	30.25 (4)	3.64 (11)
2. Existence of a program for training in research:		
Yes (special plus part of regular degree program)	30.59 (17)	20.58 (12)
No	No cases	0.00 (6)
3. Primary responsibility of the graduate faculty is research: based on the dean's estimate of the judgment of three groups within the school of education:		
High (1-3)	22.56 (9)	15.62 (8)
Low (0)	45.12 (8)	2.44 (9)

*Numbers in parentheses represent the base for mean proportions and vary because non-respondents to questions are omitted from the computations.

sources; a high proportion of the unit's budget provided for research; and a high level of facilitating the research of non-staff members. In units representing no index of interdisciplinary students and institutions emphasizing the graduation preparation for non-research, the lowest mean production exists (3.64 percent). According to the above listed organizational characteristics, this type of unit has only one or two units represented. In summary, it appears that units, in order to yield a relatively high institutional output of researchers, must develop their own arrangements for research activity and training. In other words, even if research organizations are formally attached to the graduate institutions of education, they must establish their institutional characteristics for creating a research environment that yields a high production of researchers by them.

The last statement may be supported by observing part two of Table 5.22b. According to the presence of a training program in the parent organization, units with doctoral students outside schools of education yield a slightly higher institutional output of researchers than units without an index of interdisciplinary students (30.59 percent vs. 20.58 percent). Data tend to support the direction of results. For example, in the former type of units, proportionately more have their own systematic apprenticeship program (53 percent vs. 27 percent). Furthermore, proportionately more have a high research index of interdisciplinary relations (82 percent vs. 27 percent). Again, it appears that organizations that develop their own arrangements for research activity and training tend to yield the higher mean production for researchers. It also seems that these units may even enhance the values of the training program provided by the parent organization.

The assumption that research organizations must rather autonomously develop their own characteristics considered important for production of researchers may be further supported by observing the trend of results in part three of Table 5.22b. The highest institutional output is by units with an index of interdisciplinary students and whose deans do not assess research as the primary responsibility of the graduate faculty in education (45.12 percent). In fact, according to this judgment that research is the primary responsibility, the mean proportions are rather comparable by the units with and without an index of interdisciplinary students (22.59 percent and 15.62 percent, respectively). Data tend to support the direction of the results.

Comparisons of the two types of units that yield almost similar productions show a balancing effect may be operating to equalize sufficiently the few differences between the two types of units. For example, in both types of units, a proportionately comparable number have a systematic apprenticeship program and belong to institutions mentioned on an index of research quality. In units having doctoral students outside schools of education and having their deans assess research as the primary responsibility of the graduate faculty, proportionately more have a high index of interdisciplinary researchers on the staff (62 percent vs. 14 percent) and a high level of facilitating the research of non-staff members (67 percent vs. 25 percent). However, in this same type of unit, proportionately less have doctoral recipients remaining in the organizations where they received their training (22 percent vs. 38 percent) and have affiliation as the implied control on the unit (33 percent vs. 75 percent).

In summary, it seems that comparability on certain organizational variables plus compensatory factors on differences of certain variables tend to provide the balancing effects that yield similar institutional outputs of researchers by these two types of units.

According to the two types of units that have doctoral students outside schools of education, there are data that tend to support the higher production by units whose parent organizations rate low on research as the primary responsibility of the graduate faculty (45.12 percent vs. 22.56 percent). In both types of units, a proportionately comparable number have a systematic apprenticeship program provided by the unit and a high level of facilitating the research of non-staff members. In units rating low on research as the primary responsibility, proportionately more have each of the following characteristics: a high proportion of doctoral students in education working in the unit (88 percent vs. 17 percent); doctoral recipients remaining in the organization where they received their training (38 percent vs. 22 percent); a high index of interdisciplinary researchers on the staff (86 percent vs. 62 percent); funds earmarked for training or academic programs provided by the unit (25 percent vs. 12 percent); and affiliation with a special department or program of the parent organization (50 percent vs. 33 percent).

In summary for the data presented in Table 5.22b, the following assumption tends to be supported; namely, the direction of the more favorable results for production of researchers by the parent organization does not necessarily remain consistently the same direction for more favorable results for the institutional output of researchers by the research organizations. The research organizations that yield the highest mean production of researchers tend to develop their own arrangements for research activity and training that are considered relatively important for their own institutional output. These arrangements seem either to complement existing characteristics favorable for production by the parent organization or to institute conditions not necessarily found in the parent organization. Furthermore, if research organizations neither have their own arrangements for research activity and training nor belong to parent organizations having such institutional goals and activities for research, then it may follow that such organizations have a rather low institutional output of researchers.

According to the activities performed in the research organization, again differences occur between the organizations with and without doctoral students outside schools of education. For example, in organizations with doctoral students outside schools of education, proportionately more have students with all projects being conducted in the unit, a large range of research topics on which research is being performed, and a systematic apprenticeship program. Data for the comparisons between the two types of organizations are given in Table 5.23a (page 273).

Significant results for production occur, according to an index of interdisciplinary students and three of the listed activities in Table 5.23a; namely, the period of time in which research was the primary activity of the director of the research organization, the type of research projects being performed in the unit, and the existence of a program for training in research provided by the unit. Presentation and discussion of the results, according to the three sets of conditions, follow.

TABLE 5.23a.--Comparisons between research organizations according to an index of interdisciplinary students in the unit and types of activities for training in research.*

Institutional Characteristics	Index of Interdisciplinary Students: Yes	Index of Interdisciplinary Students: No
1. Type of research projects being performed in the unit:		
Both by single investigators and research teams	57% (21)	40% (20)
2. Proportion of projects being conducted in the unit that have students with them:		
High (100%)	71% (21)	61% (18)
3. Range of research topics on which research is performed:		
Large (6-21)	73% (22)	41% (22)
4. Existence of a systematic apprenticeship program in the unit:		
Yes	50% (22)	20% (20)
5. Academic program offered by the unit:		
Yes	55% (22)	45% (22)
6. Period of time in which research was the primary activity of the director:		
Short (0-24 months)	45% (22)	36% (22)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

Given an index of interdisciplinary students in the unit, mean productions are comparable by research organizations whose directors have had either a short or a long period of time devoted primarily to research (29.80 percent and 27.50 percent, respectively). Given no index of interdisciplinary students in the unit, mean production tends to be higher by units whose directors have had a short period of time devoted primarily to research (19.75 percent vs. 10.14 percent). Table 5.23b presents the mean proportions for production, according to these four types of research organizations.

TABLE 5.23b.--Mean proportion for production of researchers by research organization according to an index of interdisciplinary students in the unit and the period of time in which research was the primary activity of the director of the unit.

Period of Time Devoted to Research	Index of Interdisciplinary Students	
	Yes	No
Long (>24 months)	27.50 (12)	10.14 (14)
Short (0-24 months)	29.80 (10)	19.75 (8)

Although the mean productions are comparable, given an index of interdisciplinary students, units do differ, according to the director's time-period devoted primarily to research* and other characteristics in the organizations. For example, in units whose director's time-period devoted primarily to research has been more than 24 months, proportionately more have the following characteristics: a high proportion of doctoral students in education working in the unit (62 percent vs. 50 percent); doctoral recipients remaining in the unit where they received their training (42 percent vs. 20 percent); a high index of interdisciplinary researchers on the staff (90 percent vs. 50 percent); funds earmarked for programs provided by the unit (27 percent vs. 10 percent); a high index of interdisciplinary relations (83 percent vs. 60 percent); and an affiliation with parent organizations mentioned on an index of research quality (80 percent vs. 50 percent). With so many favorable variables represented more in this type of unit, why are the mean productions so comparable? There again seems to be a compensatory factor operating sufficiently to equalize the differences that exist. For example, in units with their directors having a short period of time devoted primarily to research, proportionately more have the following characteristics: a high level of facilitating the research of non-staff members (78 percent vs. 62 percent) and a systematic apprenticeship program provided by the unit (60 percent vs. 42 percent). It is also noted that in both types of units a proportionately comparable number have a high proportion of funds financing projects from governmental sources. The two variables, a systematic apprenticeship program and a high level of facilitating research, seem to provide a rather effective balancing point to yield a similar institutional output of researchers.

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*Recall the discussion of this variable in the previous section on results; namely, Tables 5.14, 5.15a and 5.15b.

Given no index of interdisciplinary students in the unit, differences between organizations occur, according to the time-period devoted primarily to research by the director and other characteristics of the organizations. And the percent difference on each characteristic is predominantly more favorable for organizations whose directors' time-periods in research have been short. For example, only on four variables is a proportionately comparable number represented in each type of organization: a high proportion of doctoral students in education working in the organization; a high index of interdisciplinary researchers on the staff; a high index of interdisciplinary relations; and an affiliation with graduate institutions mentioned on the index. After these similarities, tendency on other variables is more favorable in units with directors who have had a short time-period devoted to research. For example, proportionately more have the following characteristics: doctoral recipients remaining in the units where they received their training (38 percent _vs._ 21 percent); a high proportion of funds financing projects from governmental sources (71 percent _vs._ 20 percent); affiliation as the implied control on the unit (75 percent _vs._ 57 percent) plus a high level of facilitating the research of non-staff members* (75 percent _vs._ 17 percent); and a systematic apprenticeship program provided by the unit (28 percent _vs._ 15 percent). Data tend thus to support the direction of the mean production being slightly higher in this type of unit. As has been discussed previously, directors who have had a long period of time in which research was the primary activity may experience to some degree conflicts of interests; namely, interest to pursue their own work _versus_ interest to make arrangements for facilitating the research of non-staff members as well as for providing programs for students to obtain research experiences.

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*Recall the discussion of these two variables that tend to yield a relatively high production of researchers: Table 5.21b.

Production is significant, according to an index of interdisciplinary students and the type of research projects being conducted in the unit. As one will recall, given an index of interdisciplinary students, proportionately more of this type of unit have studies being conducted by both single investigators and research teams (Table 5.23a). Mean productions by this type of unit as well as by unit having studies conducted by research teams only tend to be the highest, according to this set of institutional conditions (33.00 percent and 40.00 percent respectively). Table 5.23c gives the mean proportions for production.

TABLE 5.23c.--Mean proportion for production of researchers by research organization according to an index of interdisciplinary students and type of research projects being conducted in the unit.

Type of Research Project Being Conducted	Index of Interdisciplinary Students	
	Yes	No
By single investigators only	14.40 (5)	0.00 (5)
By research teams only	40.00 (4)	15.00 (7)
By both single investigators and research teams	33.00 (12)	19.38 (8)

As shown in Table 5.23c, given an index of interdisciplinary students, units with studies conducted only by single investigators have a mean production (14.40 percent) comparable to the mean productions by units without doctoral students outside schools of education and with studies conducted both by research teams only (15.00 percent) and by both single investigators and research teams (19.38 percent). There really are too few cases for percentaging differences between these three types of units, according to other organizational characteristics. It is noted, however, that only in one or two of the five organizations that represent the first type of unit is each of the following characteristics present: earmarked funds for training or academic programs provided in the unit; doctoral recipients remaining in the unit where they received their training; a systematic apprenticeship program provided by the unit. However, a high level of facilitating the research of non-staff members is in almost all the units.* This characteristic tends to support the direction of the results. In other words, students who do affiliate with the organization more than likely are influenced by a professor whose research is being facilitated by the unit. Thus, interaction with this type of role model may sustain commitment for a career decision of full-time activity in research. Given no index of interdisciplinary students in the units, in the two types of units where projects are being conducted either by research teams only or by both single investigators and research teams, there is a proportionately comparable number of units with the following characteristics: a high proportion of doctoral students in education working in the unit; funds earmarked for programs provided by the unit, a high index of interdisciplinary researchers on the staff; and a systematic apprenticeship program. For the remaining variables, again there seems to be a compensatory factor, described previously, that is operating effectively to equalize the few differences existing between the two types of units. Data tend to support the similarity of their mean productions.

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*Given no index of interdisciplinary students in the unit, only two of the organizations with projects conducted only by single investigators have a high level of facilitating the research of non-staff members. None has a training program provided by the unit. The absence of these two variables tends to support the low mean for production by this type of unit.

As noted earlier, the highest mean productions occur in units with an index of interdisciplinary students and with projects conducted by either research teams only or by both single investigators and research teams. Again, there are too few cases for percentaging differences between the two types of units, according to other organizational variables. However, in each type, almost all have the following characteristics: affiliation with parent organizations mentioned on an index of research quality; a high index of interdisciplinary researchers on the staff; a high level of facilitating the research of non-staff members; and a systematic apprenticeship program provided by the unit. There are for these two types of units many similar organizational characteristics. Data tend to support their comparable mean productions for researchers.

According to an index of interdisciplinary students in the units and the existence of a program for training in research, significance occurs for production of researchers. Given an index of interdisciplinary students in the unit, mean productions are almost comparable for units with and without a training program (25.73 percent and 31.36 percent, respectively). The highest mean production is by units with no doctoral students outside schools of education and with a training program provided by the unit (48.50 percent). Table 5.23d presents the data, according to this set of significant conditions.

TABLE 5.23d.--Mean proportion for production of researchers by research organizations according to an index of interdisciplinary students and the existence of a program for training in research provided by the unit.

Existence of a Program for Training in Research	Index of Interdisciplinary Students	
	Yes	No
Systematic apprenticeship program	25.73 (11)	48.50 (4)
No ("get-around + hire-leave policies")	31.36 (11)	5.25 (16)

Given an index of interdisciplinary students, units with and without training programs have some similarities and differences, according to other organizational variables. For example, in both types a proportionately comparable number have the following characteristics: affiliation with graduate institutions mentioned on an index of research quality; doctoral recipients remaining in the organizations where they received their training; affiliation as the implied control on the unit; and a high level of facilitating the research of non-staff members. Differences do exist between the two types of units. In units providing a training program and having doctoral students outside schools of education, proportionately more have the following characteristics: a high proportion of funds financing projects from governmental sources (67 percent _vs_. 50 percent); funds earmarked for training and academic programs provided by the unit (36 percent _vs_. 0 percent); a high index of interdisciplinary researchers on the staff (78 percent _vs_. 61 percent); a high index of interdisciplinary relations (100 percent _vs_. 64 percent); and a high proportion of doctoral students in education working in the unit (70 percent *vs.* 38 percent). In general, data strongly indicate that there are arrangements for a large "volume" of research activity and student-activity in the units with a training program and doctoral students outside schools of education. Why then is the mean production not even higher than the production by units without a training program? One possible explanation is this large "volume" of activity. Given many students both inside and outside schools of education plus a large volume of research activities, such as a high level of facilitating the research of non-staff members, can research organizations reach points of diminishing returns for sufficiently integrating and individualizing for the students the experiences in research provided by the organizations? If this be the case, then it may follow that the mean production is slightly larger in units with doctoral students outside schools of education and with no training program. In this type of unit there seems to be less student-activity. A student who works in the organization more than likely is influenced to affiliate by his professor whose research is facilitated by the unit. Thus, without a training program and a large "volume" of student-activity, perhaps the interaction with the professor as a role model creates an environment that individualizes for the student the experiences in research provided by the unit. Such an environment may enhance on the part of the student a commitment to a career decision for full-time activity in research.

Data tend to support the high production of researchers by units having no doctoral students outside schools of education and offering a systematic apprenticeship program (48.50 percent). (There are, however, too few cases for percentaging differences between this type of unit and the two types discussed in the previous paragraph.) In general, there are many characteristics present in this type of unit that are considered important for arrangements for research training. For example, all four organizations have doctoral recipients remaining in the units where they received their training. Furthermore, all belong to institutions mentioned on an index of research quality; also, all have a high proportion of doctoral students in education working in the organization. As might be expected, all are affiliated with a department or special program of the graduate institution of education; but only two facilitate the research of non-staff members. This type of unit seems to differ in two general ways from the type of unit having an index of interdisciplinary students and providing a training program; namely, less "volume" of student-activity and an implied influence for working in the unit. Because this type of unit is affiliated with a special program or department, the students who work in the unit may predominantly represent that department or a closely related academic field. Thus, student-activity may be less by definition of this type of implied control on the unit. Furthermore, in this type of unit, only one organization represents having interdisciplinary researchers on the staff as well as a high index of interdisciplinary relations. Again, evidence tends to support a smaller "volume" of student-activity than in units having doctoral students outside the school of education and providing a training program. In the main, a student who works in the unit more than likely is influenced by the area of specialization in which he majors. Since the research organization has affiliation with a department or special program, its existence as a possible place to obtain work or experiences in research is perhaps more visible to the student in that department or special program. These above factors coupled with a systematic apprenticeship program in this type of environment may insure two results. Both the faculty and the students of the particular department may visualize that the organization is a center to be used predominantly for training in research--training that permits the students to integrate and individualize more effectively the experiences in research he obtains. Secondly, in such an environment there may develop over a period of time not only a sustained but also a relatively high institutional output of researchers.[2]

In summary of this section, significance for production of researchers occurs, according to an index of interdisciplinary students in the unit and 13 other organizational variables. They include, among others: doctoral recipients remaining in the organizations where they received their training; proportion of funds financing proposals originating with and done by researchers in the unit from governmental sources; funds earmarked for training and academic programs provided by the organization; an index of school services provided by the unit; the type of implied control on the unit; existence of a program for training in research provided by the organization; period of time in which research was the primary activity of the director of the organization; and an index of research quality for the parent organization to which the organization belongs.

According to the 13 sets of conditions yielding significant results for production of researchers, there occur three general types of results. The first type indicates that similar mean productions exist between units with doctoral students outside schools of education, no matter what the nominal or computed value is for the second organizational characteristic. The second type indicates that similar mean productions exist between organizations with or without an index of interdisciplinary students, if the nominal or computed value for the second variable is yes or high. The third type indicates that similar mean productions exist between organizations, when the research units with doctoral students outside schools of education rank on the second characteristic oppositely from the research units with no index of interdisciplinary students. According to each trend, in some cases the comparable mean productions also represent the more favorable direction of results. (Favorable direction is defined as combined organizational characteristics that tend to yield a relatively high mean production of researchers.) Data on other organizational characteristics present in the research units tend to support the comparability of mean productions and the direction of results.

Diagrams and examples illustrating each type are given.

Type I.--Similar mean productions exist between research organizations with an index of interdisciplinary students, no matter what the nominal or computed value is for the second organizational characteristic.

	Index of Interdisciplinary Students in the Unit	
Variable #2	Yes	No
High (Yes)	*	
	↕ Comparable Mean Productions	
Low (No)	*	

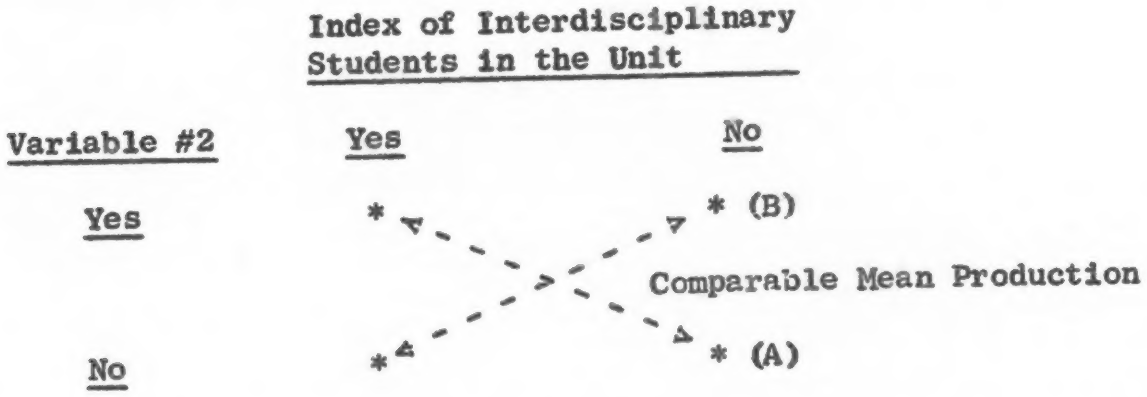
According to this type, there are three sets of conditions where the comparable mean productions also represent the highest values. In other words, given an index of interdisciplinary students in the unit, mean productions are relatively high and comparable for units (1) belonging to graduate institutions emphasizing preparation for research or for non-research; (2) having directors whose period of time devoted primarily to research has been long or short; and (3) having projects being conducted by research teams only or by both single investigators and research teams. According to Type I, mean productions are comparable for units with or without a systematic apprenticeship program. However, these mean productions are rather lower than the production by units having a training program and no doctoral students outside schools of education. Data on other characteristics of the research organization tend to support the direction of the results.

Type II.--Similar mean productions exist between research organizations with or without an index of interdisciplinary students, if the nominal or computed value for the second variable is yes or high.

	Index of Interdisciplinary Students in the Unit		
Variable #2	Yes		No
High (Yes)	*	<- - - - - - - -> Comparable Mean Productions	*
Low (No)			

According to this type, there are three sets of conditions where the comparable mean productions also represent the highest values. In other words, mean productions are relatively high and comparable for organizations with or without doctoral students outside schools of education, if: (1) there is a high proportion of funds financing projects being conducted in the organization from governmental sources; (2) there are earmarked funds for training or academic programs provided by the organization; and (3) doctoral recipients remain in the organizations where they received their training. According to Type II, mean productions are similar by research units whose parent organizations rate research as the primary responsibility of the graduate faculty of education. However, these mean productions are rather lower than the production by research units that have doctoral students outside schools of education and whose parent organizations rate low on research as the primary responsibility of the graduate faculty in education. Finally, mean productions are almost comparable for units whose parent organizations also provide a training program. Data on other characteristics of the research organizations tend to support the direction of results.

Type III.--Similar mean productions exist between research organizations, when research units with an index of interdisciplinary students rank on the second characteristic oppositely from the research units with no index of interdisciplinary students.


Index of Interdisciplinary Students in the Unit
Variable #2
Yes
No
Yes
No
* (B)
Comparable Mean Production
* (A)

According to Type III-A, there is one set of conditions where comparable mean productions also represent the highest values. In other words, mean productions are relatively high and similar, when research organizations have doctoral students outside schools of education and provide a high index of school services and when research organizations have no index of interdisciplinary students and provide a low index of school services. According to Type III-B, there are two sets of conditions where mean productions are comparable but do represent the highest values. According to the first set of conditions, mean productions are comparable by research units having an index of interdisciplinary students and not belonging to parent organizations mentioned on an index of research quality and by units having no doctoral students outside schools of education and belonging to graduate institutions mentioned on the index. The highest production, however, is by organizations having an index of interdisciplinary students and belonging to graduate institutions mentioned on the index. According to the second set of conditions that represent Type B, mean productions are similar for units that have an index of interdisciplinary students and are not affiliated with a department or special program in the institution and for units with no doctoral students outside schools of education and with affiliation as the implied control on the unit. The highest mean production occurs when units have both an affiliation with a department or special program of the institution and doctoral students outside schools of education. Data on other characteristics of the research organizations tend to support the directions of the results for both Type A and Type B.

Other characteristics of the research organizations that are examined to provide analyses for data that tend to support the directions of results for the sets of conditions include, among others: doctoral recipients remaining in organizations where they received their training; a high index of interdisciplinary researchers on the staff; earmarked funds for training or academic programs provided by the unit; a high proportion of funds financing projects from governmental sources; affiliations as the implied control on the organization; a high level of facilitating the research of non-staff members; and a systematic apprenticeship program provided by the unit. These characteristics are considered relatively important for arrangements for research activity and training by the unit. Two general situations exist to produce comparability of mean productions by organizations, according to these characteristics. The first situation shows that relative similarity on the characteristics exists between the two types of organizations being compared. An example of this situation is in Type I: given an index of interdisciplinary students in the unit, organizational characteristics and institutional outputs of researchers are comparable for units belonging to graduate institutions emphasizing preparation for research or for non-research. The second situation shows that compensatory factors may be operating to equalize sufficiently the few differences that exist between the two types of organizations being compared. In other words, some similarities on certain organizational characteristics exist. According to the few differences between the organizations, when one type of unit has proportionately more represented on one characteristic, the other type of unit has proportionately more represented on another characteristic. An example of this situation is in Type III-A: compensatory factors seem to be operating to equalize sufficiently any differences on organizational characteristics and to yield comparability of mean productions by organizations having doctoral students outside schools of education and providing a high index of school services and by organizations with no index of interdisciplinary students and a low index of school services.

According to one situation, based on the cluster of organizational characteristics that are proportionately more represented in one type of unit, reversed expectations occur for mean production of researchers. The example is in Type I: in units having an index of interdisciplinary students and providing a systematic apprenticeship program proportionately more have a cluster of characteristics considered important for arrangement for research activity and training.

Yet the mean production is (a) slightly lower than the production by units with the index of interdisciplinary students and no training program provided by the unit and (b) much lower than the production by units providing a training program and having no doctoral students outside schools of education. The data tend to support the assumption that a large "volume" of research activity and student-activity is present in the units providing a training program and having this index of interdisciplinary students in the unit. One explanation entertained for the lower mean production is that in these organizations points of diminishing returns may occur for sufficiently integrating and individualizing for the students the experiences in research that are provided in the unit--experiences that culminate in career decisions for full-time activity in research.

Other issues resulting from the trends of results include, among others: the potential impact on arrangements for research training and institutional output of researchers, given the availability of sufficient monetary resources, such as earmarked funds for training or academic programs provided in the organization; the potential need for research organizations to develop--rather autonomously in some cases from the parent organizations--their own arrangements for research activity and training that may be considered relatively important for their own institutional output of researchers; and some implied influences for students associating with certain types of organizations.

The final section for presentation of results concerns production of researchers, according to the existence of a training program provided by the unit and other organizational characteristics.

3. Production of Researchers According to a Program for Training in Research Provided by the Research Organization

The institutional activity, the existence of a training program provided by the organization, has been dichotomized accordingly: a systematic apprenticeship program versus no program. The latter category includes what might be termed two general policies of the *modus operandi* by the students associated with the organizations; namely, a "get-around policy" and a "hire-leave policy." As one will recall from Table 5.2, slightly over one-third of the organizations having students with them provide a systematic apprenticeship program; slightly less than one-third, although having no training program, permit students to get around to various projects; and slightly over one-third hire students to do specific tasks and tend not to have students remain in the organization after the jobs are completed.

Differences occur between responses by directors of organizations providing and not providing systematic apprenticeship programs, according to some general educational opinions and problems facing educational research perceived by the directors. For example, in units with a training program, proportionately more of the directors affirm the following attitudinal items: the Ph.D. does not generally have higher prestige than the Ed.D. and the schools or departments of education do not generally have low prestige within the universities. However, proportionately more agree that the quality of research training provided by the parent organization is a hindrance to the advancement of educational research. Furthermore, they tend to be more willing to relinquish most research training for graduate students in education to an outside source. Also, proportionately more of these directors state that the lack of interest in research on the part of administrators in graduate institutions of education is a hindrance to the advancement of educational research. Finally, does the very existence of a training program in their unit elicit proportionately more of these directors to state that they have not experienced difficulty in obtaining qualified students to work on the projects being performed in the organization?*

Differences between the types of organizations occur not only between the director's responses on the above items but also between their institutional output of researchers. The mean production by organizations providing a systematic apprenticeship program is 33.88 percent; the production by organizations providing no program is 17.21 percent. Furthermore, according to this institutional activity and seven other organizational characteristics, significance for production of researchers occurs. The other characteristics include: a "policy" for permitting former doctoral students who worked in the unit to remain in the unit after graduation; proportion of funds that financed proposals originating with and done by researchers in the unit from governmental sources; an index of interdisciplinary relations; the range of research topics on which research is being performed in the unit; the proportion of doctoral students working for the Ph.D. in the institution to which the unit belongs; an index of research quality for the graduate institution to which the unit belongs; and an index of interdisciplinary students in the unit. (Recall that presentation and discussion of the data have already been given for the last two sets of conditions: Tables 5.18 and 5.23c, respectively.)

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*Data for these items appear in Table F.24, Appendix F.

According to some organizational inputs of research organizations, research units providing training programs differ from those units not providing a systematic apprenticeship program. For example, in the former units, proportionately more have the following characteristics: a high proportion of doctoral students in education working on projects in the unit (73 percent _vs._ 43 percent); doctoral students outside schools of education (73 percent _vs._ 41 percent); doctoral recipients remaining in the organizations where they received their training (47 percent _vs._ 21 percent); a high index of interdisciplinary researchers on the staff (69 percent _vs._ 38 percent); funds earmarked for training or academic programs provided by the unit (35 percent _vs._ 7 percent); and a high proportion of funds financing projects being conducted in the unit from governmental sources (67 percent _vs._ 33 percent).

Production of researchers is significant, according to the existence of a training program in the unit and a "policy" for permitting doctoral recipients to remain in the organizations where they received their training.* Table 5.24 (page 294) presents the mean productions according to this set of variables.

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*Recall the footnote that discusses the operational definition of the variable, "policy" for permitting doctoral recipients to remain in the organizations where they received their training: Table 5.19b, section two of this chapter.

TABLE 5.24.--Mean proportion for production of researchers by research organizations according to the existence of a program for training in research provided by the unit and one kind of personnel recruited by the unit: former doctoral students who worked in the unit.

Former Doctoral Students Who Worked in the Unit Remain		Existence of Program for Training in Research	
		Systematic Apprenticeship Program	No ("get-around + hire-leave policies")
1. Version 1:	High (≥ 1)	48.62 (8)	20.33 (6)
	Low (0)	38.25 (4)	16.47 (15)
	Does not apply to situation	6.80 (5)	16.25 (8)
2. Version 2:*	Yes (≥ 1)	48.62 (8)	20.33 (6)
	No (0 + DNA)	20.78 (9)	16.39 (23)

*With 3 d.f. the computed H-value, 7.30, is not significant at the .05 level.

As shown in Table 5.24, data do support the expected direction for more favorable results for production; namely, in units that have both a training program and a high level of former doctoral students that remain in the unit after graduation (48.62 percent). It seems that the organizational combination of the two variables serves two purposes. First, a systematic apprenticeship program may integrate both theory of and experiences in research. Secondly, maintaining former doctoral students who have worked in the unit may present a sustainment of research workers within the academic environment who, in turn, may serve as role models to a new generation of trainees in research.

According to the existence of a training program and the economic resources available for projects performed in the unit from governmental sources, significance for production occurs.

TABLE 5.25a.--Mean proportion for production of researchers by research organizations according to the existence of a program for training in research provided by the unit and economic resources available in the unit.

Economic Resources Available	Existence of Program for Training in Research: Systematic Apprenticeship Program	No ("get-around + hire leave policies")
Proportion of funds that financed proposals originating with and done by researchers in the unit: from state and federal government:		
High (51-100%)	42.88 (8)	32.75 (8)
Low (0-50%)	38.25 (4)	10.81 (16)

As shown in Table 5.25a, the highest mean production is by organizations providing a training program and having a high proportion of funds financing projects from governmental sources (42.88 percent). The production is rather similar to the production by units also providing a training program and not having a high proportion of funds from governmental sources (38.25 percent). In turn, this production becomes rather comparable to the production by units having a high proportion of funds from governmental sources and not providing a training program (32.75 percent).

It appears that sufficient economic resources and a systematic apprenticeship favorably combine to yield a relatively high production of researchers. On the other hand, it appears that, even if no training program is provided, a high proportion of economic resources available in the organization may have influence on the institutional output of researchers.

The assumption is examined by observing differences between the types of units according to certain organizational characteristics considered important for arrangements for research activity and training. There are too few cases for percentaging differences for the units providing a training program and having a low proportion of funds. It is noted, however, that three of the four units belong to institutions mentioned on an index of research quality and also have a high proportion of doctoral students in education working in the unit. For the remaining variables included in Table 5.25b, only one or two rank high on a characteristic.

As shown in Table 5.25b, in units with a training program and a high proportion of funds financing projects by governmental sources (Col. 1), as compared to either of the other two types of units (Col. 3 or Col. 4), proportionately more represent a high rank on all the organizational characteristics except for one. The only variable on which there is comparability between this type of unit and another unit is an index of interdisciplinary students in the unit (item 2): no matter if a training program exists, or not, units with a high proportion of funds from governmental sources have a comparable index of interdisciplinary students.

Comparing just the two types of units with no training program (Col. 3 and Col. 4), one notes similarity of the proportion of cases

TABLE 5.25b.--Comparisons of organizational characteristics considered important for arrangements for research and training, according to the provision of a training program in the unit and the proportion of funds financing projects being performed in the unit by governmental sources.*

Organizational Characteristic		Proportion of Research Organizations that Have		
	Col. 1 Training Program and a High Proportion	Col. 2 Training Program and a Low Proportion	Col. 3 No Training Program and a High Proportion	Col. 4 No Training Program and a Low Proportion
1. Proportion of doctoral students in education working in the unit: High (10-80%)	75% (8)	** (4)	14% (7)	64% (14)
2. Index of interdisciplinary students in the unit: Yes	62% (8)	** (4)	62% (8)	36% (14)
3. Doctoral recipients remain in units where they received their training: Yes	75% (8)	** (4)	0% (8)	38% (16)
4. Index of interdisciplinary researchers on the staff: High (1+ %)	57% (7)	** (2)	38% (8)	40% (15)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

**Too few cases for percentaging. Recall the two statements, preceding the table, for the distribution of the units, according to the organizational characteristics.

TABLE 5.25b (Continued)

	Proportion of Research Organizations that Have			
	Col. 1	Col. 2	Col. 3	Col. 4
Organizational Characteristic	Training Program and a High Proportion	Training Program and a Low Proportion	No Training Program and a High Proportion	No Training Program and a Low Proportion
5. Funds earmarked for programs provided by the unit: Yes	62% (8)	** (4)	0% (8)	7% (15)
6. Proportion of the budget provided for research: High (> 50%)	71% (7)	** (4)	50% (8)	54% (13)
7. Index of interdisciplinary relations: High (3-12)	75% (8)	** (3)	50% (8)	44% (16)
8. Implied control on the unit: Affiliated...	75% (8)	** (4)	50% (8)	31% (16)
9. Level of facilitating the research of non-staff members: High (1+ %)	75% (8)	** (3)	38% (8)	56% (14)
10. Index of research quality for the graduate institution: Mentioned	88% (8)	** (4)	75% (8)	44% (16)

on four items: a high index of interdisciplinary researchers on the staff (item 4); funds earmarked for programs provided by the unit (item 5); a high proportion of the budget provided for research (item 6); and a high index of interdisciplinary relations (item 7). For units with no training program and a low proportion of funds (Col. 4), proportionately more have a high proportion of doctoral students in education working in the unit (item 1) and do facilitate the research of other faculty (item 9). For units with no training program and a high proportion of funds (Col. 3), proportionately more have these characteristics: a high index of interdisciplinary students (item 3); affiliation as the implied control on the unit (item 8); and an affiliation with graduate institutions mentioned on the index (item 10). In general, each type of unit seems to have comparable and compensatory factors operating to yield a similar cluster of organizational variables considered important for arrangements for research activity. However, in units with a high proportion of funds financing projects from governmental sources the mean production is higher (32.75 percent vs. 10.81 percent). This type of unit, even when compared to units with a training program and a high proportion of funds (Col. 1), does not have a comparable cluster of organizational variables considered important for arrangements for research activity and training. Yet the mean production is still in the direction of this type of organization's high institutional output.

In summary, data tend to support the assumption that, even without a training program, a high proportion of funds financing projects by governmental sources may influence the production of researchers. One explanation is that, with more economic resources available in the unit, more graduate students may be obtained and maintained as research assistants over a long period of time. Thus, there exists the potentialities of sustaining experiences in research on the part of the students over a rather consistent period of time. In such an environment, career decisions for research may have a greater possibility of being entertained by the students.

According to the provision of a training program in the organization and an index of interdisciplinary relations by the organization, significance for production occurs. Although the H-Test was not performed because of too few cases in one of the k samples, mean productions are given for the set of conditions, provision of a training program in the unit and a research index of interdisciplinary relations by the organization. Table 5.26a (page 301) provides the data according to these two sets of conditions.

As shown in Table 5.26a, mean productions are comparable for units having both a high index of interdisciplinary relation and a high research index of interdisciplinary relations, no matter if a systematic apprenticeship program exists, or not (24.30 percent and 27.46 percent for the former; 30.92 percent and 25.13 percent for the latter). The highest mean production is by units providing a training program and having either a low index of interdisciplinary relations (52.40 percent) or a low research index of interdisciplinary relations (44.67 percent).

There are too few cases for percentaging differences on other organizational characteristics for units providing a training program and a low index of interdisciplinary relations. It is noted that all

TABLE 5.26a.--Mean proportion for production of researchers by research organization according to the existence of a program for training in research provided by the unit and an index of interdisciplinary relations.

	Existence of Program for Training in Research	
	Systematic Apprenticeship Program	No ("get-around + hire-leave policies")
1. Index of Interdisciplinary Relations		
High (3-12)	24.30 (10)	27.46 (13)
Low (0-2)	52.40 (5)	8.71 (14)
2. A Research Index of Interdisciplinary Relations*		
High (1-6)	30.92 (12)	25.13 (15)
Low (0)	44.67 (3)	8.50 (12)

*The H-Test was not performed because one of the k samples had too few cases.

five units belong to institutions mentioned on an index of research quality. For those providing information on the items, almost all have a high proportion of doctoral students in education working in the unit and doctoral recipients remaining in the organizations where they received their training. A few are affiliated with a special department or program within the institution, but almost all are facilitating the research of other faculty. Finally, almost all have a high research index of interdisciplinary relations and a high proportion of funds financing projects from governmental sources. On the other hand, only a few (one or none) represent the following variables: an index of interdisciplinary students; funds earmarked for programs provided by the unit; and a high index of interdisciplinary researchers on the staff. In general, this type of unit has a sufficient cluster of organizational characteristics favorable for arrangements for research activity and training. This cluster plus the provision of a systematic apprenticeship program gives support for the relatively high mean production (52.40 percent).

It is rather difficult to discern why the mean productions are comparable between the two types of units with a high index of interdisciplinary relations (24.30 percent and 27.46 percent). Comparing these types of units on certain organizational variables does provide similarities and differences between them. Table 5.26b (page 303) presents the data.

As shown in Table 5.26b, the two types of units with a high index of interdisciplinary relations (Col. 1 and Col. 2) represent three organizational variables on which they have a proportionately comparable number. They are: doctoral recipients remaining in organizations where they received their training (item 3); a high research index of interdisciplinary relations (item 7); and an index of research quality (item 10). Only on one variable in organizations providing no training program (Col. 2) are there proportionately more units; namely, a high level of facilitating the research of other faculty (item 9). On all remaining organizational characteristics, there are proportionately more represented in units providing a training program (Col. 1).

Comparing just the two types of organizations providing no training program (Col. 2 and Col. 4), one notes similarity on only two

TABLE 5.26b.--Comparisons of organizational chacteristics considered important for arrangements for research activity and training, according to the provision of a training program in the unit and an index of interdisciplinary relations.*

Organizational Characteristic	Proportion of Research Organizations that Have Col. 1 Training Program and a High Index	 Col. 2 No Training Program and a High Index	 Col. 3 Training Program and a Low Index	 Col. 4 No Training Program and a Low Index
1. Proportion of doctoral students in education working in the unit: High (10-80%)	67% (9)	36% (11)	** (4)	50% (10)
2. Index of interdisciplinary students: Yes	90% (10)	58% (12)	** (3)	31% (13)
3. Doctoral recipients remain in units where they received their training: Yes	40% (10)	31% (13)	** (5)	14% (14)
4. Index of interdisciplinary researchers on the staff: High (1+ %)	78% (9)	50% (12)	** (2)	25% (12)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

**Too few cases for percentating. Recall statements in the second paragraph, preceding the table, for the distribution of units according to the organizational variables.

TABLE 5.26b (Continued)

	Proportion of Research Organizations that Have			
	Col. 1	Col. 2	Col. 3	Col. 4
Organizational Characteristic	Training Program and a High Index	No Training Program and a High Index	Training Program and a Low Index	No Training Program and a Low Index
5. Funds earmarked for programs provided by the unit: Yes	40% (10)	8% (12)	** (5)	7% (14)
6. Proportion of funds from governmental sources: High (51-100%)	86% (7)	36% (11)	** (4)	33% (12)
7. Research index of interdisciplinary relations: High (1-6)	100% (10)	92% (13)	** (5)	21% (14)
8. Implied control on the unit: Affiliated...	50% (10)	25% (12)	** (5)	57% (14)
9. Level of facilitating the research of non-staff members: High (1+ %)	70% (10)	92% (12)	** (3)	28% (14)
10. Index of research quality: Mentioned	70% (10)	69% (13)	** (5)	36% (14)

organizational variables: funds earmarked for training or academic programs provided by the unit (item 5); and a high proportion of funds financing projects from governmental sources (item 6). In units with a low index (Col. 2), proportionately more have a high proportion of doctoral students in education working in the unit (item 1) and are affiliated with a department or special program of the institution (item 8). On all remaining characteristics, there are proportionately more represented in units with a high index of interdisciplinary relations (Col. 2). In summary, units with no training program and a low index of interdisciplinary relations tend not to have a sufficient cluster of organizational variables to yield such a high mean production. Furthermore, with proportionately more representing a high proportion of doctoral students in education working in the unit, one wonders what forms of training in research these students receive. In other words, emphasis of the question is on what purposes these students serve in the unit. With a "large" volume of student-activity and no training program provided by the unit the question of how experiences in research are integrated by the students is germane.

This line of discussion may be pursued further by returning to the comparisons between the two types of units that have a high index of interdisciplinary relations (Col. 1 and Col. 2 of Table 5.26b). As noted previously the mean production by each type of unit is comparable. Yet in units providing a training program, proportionately more have a cluster of organizational variables favorable for arrangements for research activity and training. Why then is there similarity of their institutional outputs of researchers?

One possible explanation may be the very fact that, in each type of unit, seven out of ten represent organizations belonging to institutions mentioned on an index of research quality. Does this one institutional characteristic alone equalize sufficiently the other differences that exist between the two types of units to yield the comparable mean production?

Another explanation concerns this issue of the "volume" of student-activity in the organizations. In the research organizations with a training program, there is a high proportion of doctoral students in education and of doctoral students outside the school of education working in the organization. In other words, when there are so many students involved with the research projects being conducted in the unit as well as with the training and academic programs provided by the unit, can research organizations reach points of diminishing returns for effectively integrating experiences in research offered to the students? Is there need for the concern that such "volume" of student-activity may create less rather than more directed efforts for individualizing the experiences in research on the part of the students? Thus, in units with no training program and perhaps less "volume" of student-activity during any specified and concentrated time, are really more opportunities available for individualizing the experiences in research? Since in these units that provide no training program, proportionately more represent a high level of facilitating the research of non-staff members, do the students receive the directed efforts for individualizing their experiences in research from their professors with whom they work? Are the dynamics of this type of organization equalizing sufficiently the differences between the two types of units to yield the comparable mean production of researchers?

Proportionately more of the units providing a training program also have a large range of research topics on which research is being conducted. According to these two organizational variables, significance occurs. Similar to the trend of the data presented in Table 5.26a, data for the mean productions indicate that the highest value is in organizations providing a training program and not having a large range of research topics. Table 5.27a gives the mean productions according to this set of variables.

TABLE 5.27a.--Mean proportion for production of researchers by research organizations according to the existence of a program for training in research provided by the unit and the range of research topics on which research is being conducted.

	Existence of a Program for Training in Research	
Range of Research Topics	Systematic Apprenticeship Program	No ("get-around + hire-leave policies")
Large (6-21)	20.92 (12)	30.25 (12)
Small (1-5)	65.00 (5)	8.00 (17)

As shown in Table 5.27a, mean productions are almost similar for units with a large range of research topics, no matter if a systematic apprenticeship program is provided, or not; in fact, the mean production by units without a training program is really slightly larger (30.25 percent vs. 20.02 percent). And, as stated previously, the largest institutional output is for organizations having a systematic apprenticeship program and a small range of research topics on which research is being conducted (65.00 percent).

For units with the highest production, there are too few cases for percentaging differences on other organizational characteristics. It is noted that all but one belong to institutions mentioned on an index of research quality and have a high research index of interdisciplinary relations. Three of the four providing information for the variables have a high proportion of doctoral students in education working in the unit and a high index of interdisciplinary researchers on the staff. For the remaining variables, no more than two units of those providing information represent each of the variables: an index of interdisciplinary students; doctoral recipients remaining in the organizations where they received their training; funds earmarked for programs provided by the units; a high proportion of funds financing projects from governmental sources; and a high level of facilitating the research of non-staff members.

In general, in this type of organization, there seems to be a sufficient cluster of organizational variables for arrangements in research activity and training. Furthermore, the small range of research topics may indicate that at any one time there is a small "volume" of student-activity. With a training program in this type of situation, there may be more sustained efforts for individualizing the experiences in research offered by the research organization. Thus, a systematic apprenticeship program provided in this type of environment may reap more effective dividends--dividends measured by the institutional output of researchers.

This latter assessment may be supported by comparing the three remaining types of units, according to some organizational characteristics. (One will note some similarities of the same type of situation that was discussed for Tables 5.26a and b.) (See Table 5.27b, page 310.)

Comparing the two types of units that provide no training program (Col. 2 and Col. 4), one notes that similarity exists for three variables: an index of interdisciplinary researchers on the staff (item 4); funds earmarked for programs provided by the unit (item 5); and proportion of funds financing projects from governmental sources (item 6). Only on one variable are proportionately more organizations represented by units with a small range of research topics (Col. 4); namely, affiliation with a department or a special program of the graduate institution. For all remaining variables, in units with a large range of research topics (Col. 2), proportionately more organizations are represented. With a relatively small "volume" of research activity provided by the units, measured by a small range of research topics, perhaps the "volume" of student-activity is not needed in this type of unit. Furthermore, if there be no training program, it may be assumed that providing experiences in research for the students is not necessarily a primary purpose of this type of unit. Thus, the small mean production by the research organizations may not be surprising (8.00 percent).

However, comparing just the two types of units with a large range of research topics on which research is being conducted (Col. 1 and Col. 2), one notes a different trend of results. For example, in

TABLE 5.27b.--Comparisons of organizational characteristics considered important for arrangements for research activity and training, according to the provision of a training program in the unit and the range of research topics on which research is being conducted in the unit.*

Organizational Characteristic	Proportion of Research Organizations that Have Col. 1 Training Program and a Large Range	Col. 2 No Training Program and a Large Range	Col. 3 Training Program and a Small Range	Col. 4 No Training Program and a Small Range
1. Proportion of doctoral students in education working in the unit: High (10-80%)	73% (11)	50% (10)	** (4)	38% (13)
2. Index of interdisciplinary students: Yes	75% (12)	64% (11)	** (3)	25% (16)
3. Doctoral recipients remain in the unit where they received their training: Yes	50% (12)	33% (12)	** (5)	12% (16)
4. Index of interdisciplinary researchers on the staff: High (1+ %)	67% (9)	36% (11)	** (4)	40% (15)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

**Too few cases for percentaging. Recall statements in the third paragraph, preceding the table, for the distribution of units according to the organizational variables.

TABLE 5.27b (Continued)

Organizational Characteristic	Proportion of Research Organizations that Have Col. 1 Training Program and a Large Range	 Col. 2 No Training Program and a Large Range	 Col. 3 Training Program and a Small Range	 Col. 4 No Training Program and a Small Range
5. Funds earmarked for programs provided by the unit: Yes	33% (12)	8% (12)	** (5)	7% (15)
6. Proportion of funds from governmental sources: High (51-100%)	75% (8)	33% (9)	** (5)	33% (15)
7. Research index of interdisciplinary relations: High (1-6)	80% (10)	67% (12)	** (4)	50% (14)
8. Implied control on the unit: Affiliated...	42% (12)	25% (12)	** (5)	50% (16)
9. Level of facilitating the research of non-staff members: High (1+ %)	73% (11)	92% (12)	** (4)	25% (16)
10. Index of research quality for the graduate institution: Mentioned	75% (12)	67% (12)	** (5)	47% (17)

units with a training program (Col. 1), proportionately more rank high on the institutional variables termed inputs of the organization (items 1, 2, 3, 4, 5, and 6). Proportionately more, also, have units with a high research index of interdisciplinary relations and with affiliation as the implied control on the unit. Only on one variable are the two types of units similar; namely, an index of research quality. Finally, in units with no training program (Col. 2), proportionately more have a high level of facilitating the research of non-staff members. In conclusion, the cluster of organizational variables considered important for arrangements for research activity and training tends to be proportionately more favorable in organizations that provide the training program. Yet the mean production is even somewhat lower than the institutional output by units providing no program. Why is the direction of results reversed from the expected trend?

One explanation again is this issue of the "volume" of student-activity" in the organizations. As entertained previously, when there are so many students involved with the research projects being conducted in the unit as well as with the training and academic programs provided by the organization, can research organizations reach points of diminishing returns for effectively integrating experiences in research offered to the students? Is there need for the concern that such "volume" of student-activity may create less rather than more directed or sustained efforts for individualizing the experiences in research on the part of the students? As one recalls, in the organizations with a large range of research topics and no program for research training, proportionately more do represent a high level of facilitating the research of non-staff members. In this type of environment do students receive more the directed and sustained efforts for individualizing their experiences in research from their professors with whom they work? Are the dynamics of this type of organization equalizing sufficiently any of the other differences between the two types of organizations to yield even a higher institutional output of researchers?

Forty percent of the research units whose parent organizations have a high proportion of the doctoral students working for the Ph.D. provide a systematic apprenticeship program. However, in research units whose parent organizations have a low proportion working for the Ph.D., only 28 percent provide a training program. Significant results for production occurs according to two sets of conditions: according to (1) the type of program for training in research and the proportion of doctoral students working for the PhD. in the graduate institution of education as well as (2) the existence of a program for training in research and the proportion...working for the Ph.D.... Data for mean productions are given for the two sets of conditions in Table 5.28a (page 314).

As shown in Table 5.28a, the highest mean production is by research units providing a training program and belonging to institutions with a low proportion of doctoral students working for the Ph.D. (35.75 percent). The next more favorable direction for production is in units belonging to institutions with a high proportion of doctoral students working for the Ph.D.: research units with a "hire-leave policy" yield a mean production of 30.50 percent; units with a "get-around policy" yield a production of 22.17 percent; and organizations providing the systematic apprenticeship program have an institutional output of 13.12 percent. The results, as shown in part 2 of Table 5.28a, represents a type discussed previously: similar mean productions exist between organizations with or without a particular variable, if the rating for the second variable is high. If there is a high proportion of doctoral students working for the Ph.D., mean productions are almost similar by units with or without a training program. In turn, the production of the latter type is similar to that by units having a training program and a low proportion of doctoral students working for the Ph.D.

TABLE 5.28a.--Mean proportion for production of researchers by research organization according to the type of program for training in research provided by the unit and the proportion of doctoral students working for the Ph.D. in the graduate institution of education.

	Proportion of Doctoral Students Working for the Ph.D.	
Version 1: Type of program for training in research:	High (25-100%)	Low (0-24%)
Systematic apprenticeship program	13.12 (8)	35.75 (4)
"Get-around policy"	22.17 (6)	0.00 (5)
"Hire-leave policy"	30.50 (6)	5.00 (5)
Version 2: Existence of a program for training in research:		
Systematic apprenticeship program	13.12 (8)	35.75 (4)
No ("get-around + hire-leave policies")	26.33 (12)	2.50 (10)

The type of results also raises an issue discussed in the previous section: the highest mean production by research units is not necessarily in the same category of a variable that provides the highest mean production by the parent organizations. In other words, the institutional output of researchers by graduate institutions of education tends under certain conditions to be larger, when institutions have a high proportion of doctoral students working for the Ph.D. There may be evidence to support the need for research organizations to develop--rather autonomously in some cases from the parent organizations--their own arrangements for research activity and training that are considered relatively important for their own institutional output of researchers.

Comparing the six types of organizations shown in part 1 of Table 5.28a is not done because there are too few cases in most of the types for percentaging differences on certain organizational characteristics considered important for arrangements for research activity and training. Thus, analyses will concentrate on part 2 of Table 5.28a.

There are too few cases for percentaging differences for the research organizations yielding the highest mean production. All of these units that provide a training program and belong to graduate institutions with a low proportion working for the Ph.D. do represent parent organizations mentioned on an index of research quality. Three of the four organizations have the following characteristics: a large range of research topics on which research is being conducted; doctoral recipients remaining in the units where they received their training; and affiliation as the implied control on the unit. Only two of the four have these two characteristics: funds earmarked for training or academic programs provided by the unit and a high proportion of the unit's budget provided for research. Of the organizations providing information, the following number have these characteristics: three represent a high proportion of the doctoral students in education working on projects in the unit; and one or two units have: doctoral students outside schools of education; a high index of interdisciplinary researchers on the staff; a high proportion of funds financing projects from governmental sources; and a high level of facilitating the research of non-staff members. In summary, this type of organization seems to have a cluster of organizational variables considered important for arrangements for research activity and training.

According to these same organizational characteristics, a comparable cluster exists in research units that provide a training program and belong to parent organizations with a high proportion of doctoral students working for the Ph.D. Table 5.28b (page 318) presents data for comparisons between the remaining types of organizations.

As shown in Table 5.28b, in units that provide a training program and belong to institutions with a high proportion working for the Ph.D. (Col. 1), there seems to be a cluster of organizational variables also favorable for arrangements for research activity; namely, an index of interdisciplinary students (item 2); a high index of interdisciplinary researchers on the staff (item 4); a high index of interdisciplinary relations (item 8); a high level of facilitating the research of non-staff members (item 10); a large range of research topics (11); and affiliation with parent organizations mentioned on the index (12). In fact, in this type of organization, there even seems to be a slightly larger "volume" of research activity and student-activity than in units that provide a training program and belong to institutions with a low proportion working for the Ph.D. (Col. 3).

TABLE 5.28b.--Comparisons of organizational characteristics considered important for arrangements for research activity and training, according to the provision of a training program in the unit and the proportion of doctoral students working for the Ph.D. in the graduate institution of education.*

	Proportion of Research Organizations that Have			
	Col. 1	Col. 2	Col. 3	Col. 4
Organizational Characteristic	Training Program and a High Proportion	No Training Program and a High Proportion	Training Program and a Low Proportion	No Training Program and a Low Proportion
1. Proportion of doctoral students in education working in the unit: High (10-80%)	43% (7)	50% (8)	** (3)	25% (10)
2. Index of interdisciplinary students: Yes	88% (8)	50% (10)	** (3)	20% (10)
3. Doctoral recipients remain in the unit where they received their training: Yes	12% (8)	25% (12)	** (4)	20% (10)
4. Index of interdisciplinary researchers on the staff: High (1+ %)	67% (6)	40% (10)	** (2)	33% (9)

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

**Too few cases for percentaging. For distribution of units under Col. 3, recall statements in second paragraph, preceding the table.

TABLE 5.28b (Continued)

	Proportion of Research Organizations that Have			
	Col. 1	Col. 2	Col. 3	Col. 4
Organizational Characteristic	Training Program and a High Proportion	No Training Program and a High Proportion	Training Program and a Low Proportion	No Training Program and a Low Proportion
5. Funds earmarked for programs provided by the unit: Yes	25% (8)	0% (11)	** (4)	20% (10)
6. Proportion of funds from governmental sources: High (51-100%)	** (5)	40% (10)	** (3)	33% (6)
7. Proportion of the budget provided for research: High (> 50%)	43% (7)	67% (9)	** (4)	44% (9)
8. Index of interdisciplinary relations: High (3-12)	88% (8)	55% (11)	** (3)	30% (10)
9. Implied control on the unit: Affiliation...	25% (8)	50% (12)	** (4)	40% (10)
10. Level of facilitating the research of non-staff members: High (1+ %)	86% (7)	50% (12)	** (3)	40% (10)
11. Range of research topics: Large (6-21)	80% (10)	43% (12)	** (4)	30% (10)
12. Index of research quality for graduate institution: Mentioned	75% (8)	75% (12)	** (4)	50% (10)

Comparisons of the two types of units that represent institutions with a high proportion working for the Ph.D. and that differ on the provision of a training program (Col. 1 and Col. 2) show that a larger "volume" of activity exists in units with the training programs. For example, only on two items does each represent a proportionately comparable number of units: a high proportion of doctoral students in education working in the unit (item 1) and affiliation with parent organizations mentioned on an index of research quality (item 12). Only on two variables are proportionately more represented in the units without a training program (Col. 2): doctoral recipients remaining in the units where they received their training (item 3) and a high proportion of the budget provided for research (item 7). On all remaining characteristics, proportionately more are represented in the research organizations that provide a training program (Col. 1).

Finally, research organizations that provide no training program and represent institutions with a low proportion working for the Ph.D. seem to have a very small "volume" of research activity. For example, comparing just the units that do not provide training programs (Col. 2 and Col. 4), one notes similarity on only three characteristics: doctoral recipients remaining in organizations where they received their training (item 3); a high index of interdisciplinary researchers on the staff (item 4); and a high proportion of funds financing funds from governmental sources (item 6). Only on one characteristic are there proportionately more in units that represent institutions with a low proportion working for the Ph.D. (Col. 4); namely, funds earmarked for programs provided by the unit (item 5). On all remaining characteristics, proportionately more are in the units whose parent organizations have a high proportion working for the Ph.D. (Col. 2). In summary, data tend to support the assumption that a cluster of organizational characteristics considered important for arrangements for research activity and training is relatively absent in the type of unit which does not provide a training program and does not represent parent organizations with a high proportion of "Ph.D. candidates." Hence, the small institutional output of researchers, 2.50 percent, may reflect the absence of a cluster of characteristics for arrangements for research activity and training in the organization.

Why does the mean production for units that provide a training program and represent institutions with a high proportion working for the Ph.D. differ so much with the productions of the remaining two types of research organizations (Col. 2 and Col. 3)? One explanation still lies with this issue of a large "volume" of research activity that has been discussed previously. Again the same question is germane. Does a large "volume" of student-activity, coupled even with a training program in the unit, yield points of diminishing returns for the organizations to integrate and individualize sufficiently the experiences in research that are offered in the unit?

Furthermore, are certain characteristics that may note a large "volume" of research activity in this type of organization creating (or reflecting) certain pressures that are not perhaps as strongly represented in the remaining three types of units? For example, as noted previously, in this type of unit proportionately more have a high index of interdisciplinary researchers on the staff as well as a high level of facilitating the research of non-staff members. Yet only half represent a high proportion of the unit's budget provided for research. Could the demands for more money and facilities for research by the staff and non-staff members produce pressures in the environment that affect the student's perception of research activity--and a career decision for full-time activity in research?

Are there other factors operating within this type of unit that may affect the research activity in the unit as well as the student's perception of a career decision for full time research? For example, even when a cluster of organizational characteristics for research activity and training exists, if research organizations are not perceived predominantly as training centers for preparation for a career in full-time research, will the institutional output of researchers be affected? Although data are not available to answer specifically the question on how the research organizations are, in fact, perceived, implications may be obtained by examining the opinion held by deans and directors about the distinction between the two types of doctorate in education. No matter what the proportion of doctoral students are working for the Ph.D., if there is agreement between the administrative officials of the two institutional settings within the same organization that the Ph.D. should be a research degree and the Ed.D. should be a professional degree, it may be assumed that less conflict exists for ways of implementing the preparation in research for students who work for either degree. Given agreement between the two administrative officials and given a cluster of organizational factors considered important for arrangements for research activity and training in the unit, two outcomes may follow. First, doctoral students working for either degree may obtain more clarity on ways of obtaining experiences in research that prepare them for whatever professional career they undertake upon the receipt of the degree. Second and perhaps more specifically, research organizations may create an environment in which the students who associate with them obtain experiences in research that culminate in a career decision for full-time activity in research.

To examine the assumption and the two implied consequences, data are given on the level of agreement by the both administrative officials in the same graduate institution that the two types of doctorate in education should be specialized degrees. Of the 28 units having information from both the dean and the director of the same institution, 64 percent represent disagreement on the item between these two officials from the same institution. In units providing a training program and having a high proportion of doctoral students working for the Ph.D. in the graduate institution, no unit represents agreement between both officials in the same institution that the two degrees should be specialized. The only unit in this type of organization which registers agreement between both officials is one in which both agree that the two degrees should not be specialized. No matter if the proportion of doctoral students working for the Ph.D. is high or low research organizations with no training program register about half on agreement and on disagreement for the item between the administrative officials of the same organization. Finally, of the 18 units which represent disagreement between both officials of the same institution, the smallest percent (six) are noted by the type of organization that provides a training program and belongs to institutions with a low proportion working for the Ph.D. Of course, the number of cases for this type of analysis is small. However, direction of data tends to support the assumption that less conflict may exist for ways of implementing the preparation in research for students who work for either degree in this type of institutional setting. And, perhaps, in this type of institutional setting the use of the research organizations may be visualized by the students as predominantly training centers where experiences in research culminate in career decisions for full-time activity in research. Thus, the relatively high institutional output by the research organizations that provide a training program and represent institutions with a low proportion of doctoral students working for the Ph.D. may in part be reflecting some of the dynamics of less conflict in the environment.[3]

In summary of this section, significance for production of researchers occurs, according to the existence of a training program in the unit and seven other organizational variables. They include: a "policy" for permitting former doctoral students who worked in the unit to remain in the organization after graduation; proportion of funds that financed proposals originating with and done by researchers in the unit from governmental sources; an index of interdisciplinary relations between the research unit and other academic departments and professional schools within the university; a range of research topics on which research is being conducted in the organization; an index of interdisciplinary students in the unit; an index of research quality for the graduate institution of education to which the research unit is affiliated; and the proportion of doctoral students working for the Ph.D. in the graduate institution of education.

According to the seven sets of conditions yielding significant results for production of researchers, there are two general types of results. The first indicates that similar mean productions occur between organizations with or without training programs, if the nominal or computed value for the second variable is yes or high. The second type indicates that similar mean productions exist between organizations, when the research units with training programs rank on the second characteristic oppositely from the research units with no training programs. According to each type, the comparable mean productions, however, do not represent the highest mean values yielded by the organizational combinations of characteristics under consideration. Data on other organizational characteristics considered important for research activity and training tend to support the direction of results.

Diagrams and examples illustrating each type are given.

Type I.--Similar mean productions exist between research organizations with or without training programs, if the nominal or computed value for the second variable is yes or high.

Existence of a Training Program in the Unit

Variable #2 — Yes — No

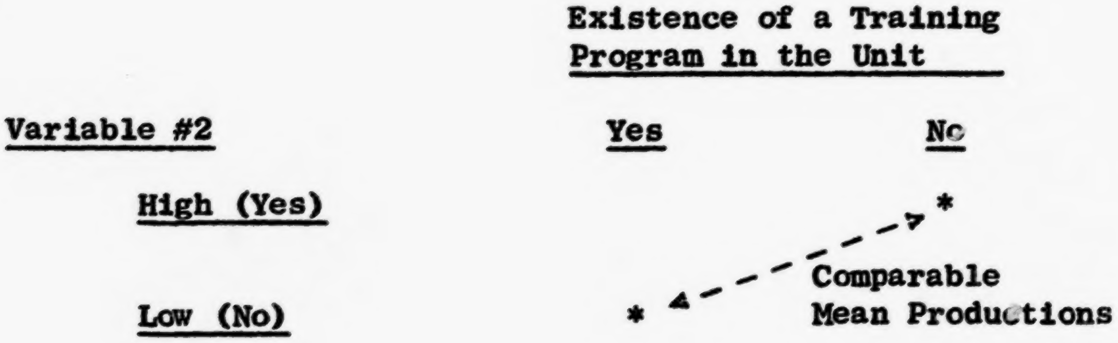
High (Yes) — * ◄- - - - - - - ► *

Comparable Mean Productions

Low (No)

According to this type, there are four sets of conditions where comparable mean productions occur, according to combined organizational characteristics under consideration. In other words, mean productions are rather similar for research units with or without training programs, if: (1) there is an index of interdisciplinary students in the unit; (2) there is a high index of interdisciplinary relations; (3) there is a high range of research topics on which research is being conducted; and (4) a high proportion of doctoral students working for the Ph.D. is represented in the graduate institution of education. However, according to all four sets of conditions, consistently the highest mean value for the combined organizational characteristics under consideration occurs in organizations that provide training programs and rank low on the second organizational characteristic. Data on other characteristics tend to support the direction of results.

Type II.--Similar mean productions exist between research organizations, when research units with training programs rank on the second characteristic oppositely from the research units with no programs.


Existence of a Training Program in the Unit
Variable #2
Yes
No
High (Yes)
*
Low (No)
*
Comparable Mean Productions

According to this type, there are three sets of conditions where comparable mean productions occur, according to combined organizational characteristics under consideration. In other words, mean productions are rather similar: (1) when research units providing training programs do not belong to parent organizations mentioned on an index of research quality and when research units not providing training programs do belong to parent organizations mentioned on the index; (2) when research units providing training programs do not have doctoral recipients remain in the organizations where they received their training and when research units not providing training programs do have doctoral recipients remain in the organizations where they received their training; and (3) when research units providing training programs have a low proportion of funds financing projects from governmental sources and when research units not providing training programs have a high proportion of funds from governmental sources. However, according to all three sets of conditions, consistently the highest mean value for the combined organizational characteristics under consideration occurs in organizations that provide training programs and rank high on the second organizational characteristic. Data on other characteristics tend to support the direction of results.

Other characteristics of the research organizations that are examined to provide analyses for data that tend to support the direction of results for the sets of conditions include, among others: doctoral recipients remaining in organizations where they received their training; a high proportion of doctoral students in education working in the unit; an index of interdisciplinary students in the unit; a high index of interdisciplinary researchers on the staff; affiliation as the implied control on the unit; a high level of facilitating the research of non-staff members; and earmarked funds for training or academic programs provided by the organization.

According to some situations, based on the cluster of organizational characteristics that are proportionately more represented in one type of unit, reversed expectations occur for mean productions of researchers. For example, according to Type I, in units providing a training program and having a large range of research topics, proportionately more have a cluster of organizational characteristics considered important for arrangements for research activity and training than do units that also have a large range of research topics but do not provide a training program. Furthermore, in the former type of research organization the cluster of organizational variables seems comparable to those in units providing a training program and having a small range of research topics. Yet the mean production by this type of unit has a -9.33 percent-difference with the production by organizations with a large range of research topics and no training program provided by the unit and a -44.08 percent-difference with the production by units providing a training program and having a small range of research topics on which research is being conducted. The data tend to support an assumption that a large "volume" of research activity and student-activity may be present in this type of research organization. As discussed in section two, one explanation entertained for the lower mean production is that, in such organizations, points of diminishing returns may occur for sufficiently integrating and individualizing for the students the experiences in research that are provided in the unit--experiences that culminate in career decisions for full-time activity in research.

Other issues resulting from the trends of results include, among others: the potential impact upon the institutional output of researchers by research units that do not belong to parent organizations mentioned on an index of research quality but do provide training programs in the units and the need for further investigation of the role of research organizations as training centers in educational research.

The final section of chapter five gives a brief summary of the data and results discussed in the chapter.

C. Summary

The purpose of the summary is to present only an overview of a few highlights concerning the training in research and the production of researchers by research organizations affiliated with graduate institutions of education. Rationale is three-fold. First, many attributes of the organization have been inspected. Secondly, already given is a brief summary at the end of each section of the three organizational characteristics considered relatively important for production of researchers. Thirdly, in chapter seven of the report which presents some conclusions and implications based on the study, statements will incorporate more specifically the sources of the findings reported in the present chapter.

According to the 1965 institutional survey of directors of research organizations, 86 percent of the organizations have doctoral students working with projects or associated in some capacity with the units. However, only a little over one-third of the research units that have students provide a systematic apprenticeship program in the unit. If research organizations belong to graduate institutions of education that have a program for training in research, then more units tend to have a similar training program than do the organizations affiliated with graduate institutions without a training program. Stated another way, one-fourth of the research organizations neither have a systematic apprenticeship program nor belong to parent organizations that have a training program. Slightly more than four out of ten units do not have a systematic apprenticeship program, even though they are affiliated with institutions that provide training programs. Finally, only 34 percent of the units in which a training program exists represent institutions with a similar program.

In units with a systematic apprenticeship program as compared to those without a training program, proportionately more of the directors state that a hindrance to the advancement of educational research is the quality of research training provided in graduate institutions of education. Furthermore, slightly more are willing to relinquish most of the research training for students in education to an outside source.

The mean proportion of all doctoral students in education that work with projects in research organizations is 12.58 percent. Stated another way, the mean number of doctoral students in education per research project that has students is 1.93. Thus, it seems that students associated with these projects do have a rare opportunity to gain experiences in research. However, it seems that research organizations generally affect the training in research of a relatively small proportion of doctoral students in education. With the fact that only

35 percent of these units have a systematic apprenticeship program, there is more evidence that only a very small proportion of doctoral students receive systematic efforts in training for research by the organizations.

Thus, data tend to support the conclusion that the potential opportunities to obtain experiences in research that are available in research organizations have not been fully used. Furthermore, in four out of ten units no doctoral student who had worked in the organization over the past three years immediately entered upon the receipt of the doctorate in education a position where research was a primary activity. Only slightly over one-fourth of all the doctoral recipients who had worked in the research organization immediately entered positions where research was the primary responsibility. Although a little over one-half of these individuals held positions in colleges or universities, the remaining entered positions in research agencies outside the university community, such as school systems. In three out of ten organizations at least one doctoral recipient remained in the organization where he had received his training. In summary, only 2.3 doctoral recipients per research organization immediately entered positions where research was the primary activity; only .63 doctoral recipients per organization remained in the research unit where they received their training.

Opportunities for apprenticeships on projects are more available in research organizations than on projects being conducted outside these institutional settings. In other words, slightly over five out of ten projects in research organizations have doctoral students working with them; only slightly over four out of ten projects being conducted outside the research units in these same schools have graduate students with them. Furthermore, the absolute number of doctoral students in education who work on projects is quite large. Even the absolute number of doctoral students who use either the facilities or the data of the research units for their doctoral dissertations is slightly larger. (It is assumed, however, that there is considerable overlap between the two categories of students.) There is also the opportunity in some organizations for interaction between doctoral students both inside and outside schools of education.

One of the major concerns reflected by directors of research organizations is the lack of financial support for activities for training in research. The large difference on institutional outputs of researchers between organizations that provide and do not provide earmarked funds for training or academic programs in the research tends to support one of the advantages of such funds.

According to a 48 x 48 matrix of organizational variables, significant results for production of researchers by research organizations occur under 72 sets of conditions. Eighteen variables do not appear with any other variable to yield sets of significant conditions. Sixty percent of the sets of conditions are provided by 27 variables whose frequencies of appearing with other organizational characteristics range from one to three. Forty percent are provided by three variables whose frequencies of appearing with other variables range from seven to thirteen. These three organizational characteristics are considered relatively important in discussing the development of professional personnel in educational research by research organizations. The three variables represent two external and one internal characteristics: namely, an index of research quality for the graduate institution of education to which the research unit belongs, an index of interdisciplinary students in the organization, and the existence of a program for training in research provided by the organization.

According to an index of research quality and nine other organizational characteristics, significant results for production occur. They include, among others: the type of legal control of the university; proportion of doctoral students in education working on projects in the organization; an index of interdisciplinary students in the unit; level of facilitating the research of non-staff members; period of time in which research was the primary activity of the director of the organization; and the existence of a program for training in research provided by the unit. In general, the direction of the more favorable results is in organizations that belong to institutions mentioned as doing the most competent and worthwhile research.

According to an index of interdisciplinary students in the unit and thirteen other organizational characteristics, significant results for production occur. They include, among others, doctoral recipients remaining in the organizations where they received their training; proportion of funds financing proposals originating with and done by researchers in the unit from governmental sources; funds earmarked for training and academic programs provided by the organization; an index of school services provided by the unit; the type of implied control on the unit; and the existence of a program for training in research provided by the unit.

Three types of results occur. The first type shows that similar mean productions exist between organizations with an index of interdisciplinary students, no matter what the nominal or computed value is for the second organizational variable. For example, given an index of interdisciplinary students in the unit, mean productions are relatively high and comparable for organizations having directors whose period of time devoted primarily to research has been long or short. The second type indicates that similar mean productions exist between organizations with or without an index of interdisciplinary students, if the nominal or computed value for the second variable is yes or high. For example, mean productions are relatively high and comparable for organizations with or without doctoral students outside schools of education, if there are earmarked funds for training or academic programs provided by the organization. The third type indicates that similar mean productions exist between organizations, when units with doctoral students outside schools of education rank on the second characteristic oppositely from the research units with no index of interdisciplinary students. For example, mean productions are relatively high and similar, when research organizations have doctoral students outside schools of education and provide a high index of school services and when research organizations have no index of interdisciplinary students and provide a low index of school services. Data on other characteristics considered important for arrangements for research activity and training tend to support the direction of results.

Significant results for production occur, according to the existence of a program for training in research provided by the organization and seven other organizational characteristics. They include, among others: proportion of funds that financed proposals originating and done by researchers in the organization from governmental sources; an index of interdisciplinary relations between the research unit and other academic departments and professional schools within the university; a range of research topics on which research is being conducted in the organization; and the proportion of doctoral students working for the Ph.D. in the graduate institution of education.

Two types of results occur. The first type indicates that rather similar mean productions occur between organizations with or without training programs, if the nominal or computed value for the second variable is yes or high. For example, given a large range of research topics on which research is being conducted in the organization, mean productions are almost comparable for research units that provide or do not provide a systematic apprenticeship program. The largest mean value, however, occurs by organizations that provide a training program and have a small range of research topics. The second type indicates that similar mean productions exist between organizations, when research organizations with training programs rank on the second characteristic oppositely from the research organizations with no training program. For example, mean productions are rather similar, when research units providing a training program have a low proportion of funds financing projects from governmental sources and when research units not providing a training program have a high proportion of funds from governmental sources. The highest mean value, however, is yielded by organizations providing a training program and having a high proportion of funds financing projects from governmental sources. Data on other characteristics considered important for arrangements for research activity and training tend to support the direction of results.

Certain issues are elicited by the results. The more favorable results* do not sometimes occur where expected. For example, in some research organizations where there proportionately more exists a cluster of organizational characteristics relatively important for arrangements for research activity and training, the mean production is still low. Generally, these research organizations have what may be termed a large "volume" of research activity and student-activity. One explanation for the lower mean production is that all students who associate with the organizations may not visualize the research organizations predominantly as training centers for obtaining experiences in research--experiences which culminate in career decisions for full-time activity in research. Another explanation is that, given a large "volume" of student-activity, research organizations may reach points of diminishing returns for sufficiently integrating and individualizing for the students the experiences in research provided by the organizations. A lower institutional output of researchers by this type of organization may be reflecting the dynamics of the effects of a large "volume" of student-activity.

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*The type(s) of institutional setting that yields the highest mean value for production implies "the more favorable direction of results."

Other issues resulting from some trends of results include, among others: the potential impact on arrangements for research training and institutional output of researchers, given the availability of sufficient monetary resources, such as earmarked funds for training or academic programs provided in the organizations; the potential need for research organizations to develop--rather autonomously in some cases from the parent organizations--their own arrangements for research activity and training that may be considered relatively important for their own institutional output of researchers; and some implied influences for students associating with certain types of organizations.

The next chapter of the report covers a selected review of patterms for potential commitment to research by the 1964 doctoral recipients of graduate institutions of education.

Footnotes for Chapter V

1. Although 33 percent of the doctoral recipients who worked in the unit over the past three years entered immediately upon the receipt of the degrees positions that were primarily teaching in colleges or universities, information is not available for percent of their professional time devoted to research.

   Although the respondents to the questionnaire survey of 1964 doctoral recipients gave information about their having worked in research bureaus, the names of the research units were not given.

   Thus, data for production of researchers by research organizations are confined to doctoral recipients who immediately entered positions where research was the primary activity.

2. Rationale for the lower mean production by units having doctoral students outside schools of education and offering a training program may be two-fold. First, as discussed previously, the large "volume" of student-activity that seems to typify this organization may create points of diminishing returns for effectively integrating and individualizing for the students the experiences in research that are offered. Second, this type of organization represents more a facilitating unit rather than an affiliating one. Thus, two dynamics of the situation may be occurring. First, many students may be associated with the unit only to use the facilities and data of the organization for their doctoral dissertations. This type of association does not alone necessitate on the part of the student an involvement with research activities that culminate in a career decision in which research is to be the primary activity. Second, just because training and academic programs are offered in this type of organization, one cannot assume that all students in the unit are participating in the programs. Furthermore, if this be the case, then it may follow that these students may be receiving less reinforcement for involvement in research training than either the students in organizations having a training program and no doctoral student outside schools of education or the students in organizations offering no training program and having an index of interdisciplinary students. Although data are not available at this time to support this assumption, according to three case studies done by the writer in an organization that has these two organizational characteristics, the doctoral students discussed this issue.

3. To carry this point one step further, there tends to be more agreement on a hindrance to the advancement of educational research between the two officials of the same institutional setting where there exists more disagreement about the specialization of the two degrees; namely, the lack of interest in research on the part of administrators in graduate institutions of education is a hindrance to the advancement of educational research. Of the 30 units

providing information on this hindrance from both deans and directors of the same institution, 60 percent represent units where both the dean and director of the same institution agree with the item claimed to be a hindrance. Eighty-eight percent of the research organizations that provide a training program and have a high proportion working for the Ph.D. register agreement to the item by both officials in the same institution. Given a high proportion working for the Ph.D., units providing no training program register 62 percent (8) agreement by both officials in the same institution. Given a low proportion working for the Ph.D., units providing no training program register 50 percent (10) agreement by both officials in the same institution. Finally, of the four units representing a low proportion of doctoral students working for the Ph.D. in the institution and providing a training program, only one unit registers agreement to the item by both officials in the same institution. Admittedly the number of cases are again rather small. However, the trend of data seems to support the assumption that conflict (pressures) may be operating in the institutional setting where the characteristics considered important for arrangements for research activity and training form a relatively high cluster but the output of researchers is comparatively smaller. Only further investigation of the nuances of the institutional settings can determine the relevancy or accuracy of this line of thinking--that is, if, in fact, conflict or pressure concerning research activity and training do affect the student's perception of the type of training he is receiving and his commitment to a career decision for full-time activity in research.

CHAPTER VI

PATTERNS FOR POTENTIAL COMMITMENT TO RESEARCH BY THE 1964 DOCTORAL RECIPIENTS IN EDUCATION

As stated in chapter one, there are two purposes for the analyses of data for this report. The first purpose is to provide identification of conditions and structural characteristics of the graduate institution of education and of any sub-units of the institution that may relate to production of researchers by the two types of organizational settings. The second objective is to identify patterns for potential commitment to research by recent doctoral recipients in education. In chapters three and five, analyses of data support that, given certain conditions and structural characteristics within the organizational settings that relate to opportunities for obtaining experiences in research, graduate institutions and research organizations tend to be differentiated on their production of researchers. In this chapter, analyses of data will examine characteristics of the 1964 doctoral recipients in education that may tend to differentiate them on their patterns for potential commitment to research.

The major source for the data reported in this chapter is the questionnaire survey of the 1964 doctoral recipients in education by Buswell, McConnell, et al. (23). Source for the data that provide certain organizational characteristics of the graduate institution of education from which the doctorate was received is the 1964 questionnaire survey of deans and research coordinators of graduate schools or departments of education by Lazarsfeld and Sieber.

Primary emphasis of the analyses of data is on the patterns for potential commitment to research by the 1964 doctoral recipients in education. Since the data reflect the activities in research during the first year following the receipt of the doctorate, measures operationally defining patterns for sustained commitment to research are not available at this time.[1] Four variables are used to define the patterns. They are: participation in research projects during the first year following the receipt of the doctorate; proportion of professional time spent in research; publication of a research study closely related to the topic of the dissertation; and preference for work in doing research now.

According to four major series of characteristics of the 1964 doctoral recipients, each pattern for potential commitment to research is analyzed. In turn, each pattern is examined, according to the type of doctorate in education earned by the respondent and each variable operationally defining each major series of characteristics. The four major series of characteristics, the number of variables included in each series, and examples of each are given.

The first series represent personal characteristics of the 1964 doctoral recipient which include one variable; namely, age at the completion of the doctoral program.

The second series are the academic patterns of the 1964 doctoral recipient and include four sets of variables. The first set, characteristics of the graduate institution of education from which the doctorate was received, includes 11 variables: such as, proportion of graduate faculty doing research; type of graduate preparation emphasized by the school or department of education; professional experience as a formal entrance requirement for admission to the graduate program; and the level of admission to the graduate program. The second set, major subject areas and courses taken by the respondents, includes seven variables: such as, major subject of the Bachelor's degree; the number of courses taken in college mathematics; and the number of graduate courses taken outside the department of education. The third set for academic patterns, evaluation of the academic program and experiences, includes six variables: such as, value of research technique courses as preparation of doing research; less interest in respondent's work shown by professors in courses outside the department of education; a rationale for taking courses outside the department of education; and the place where respondents mainly learned courses that taught methods now being used in doing research. The fourth set, time-patterns representing the extent of involvement in the graduate work, includes two variables; namely, the number of semesters the respondent was a full-time student and the longest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received.

The third series of characteristics cover the patterns for economic resources during graduate work and include four variables; such as, the receipt of a research scholarship or assistantship and the respondent's being in debt for his education at the time of the receipt of the doctorate.

The fourth series cover certain values and processes of decision making for activity in research prior to the receipt of the doctorate. Eight variables, operationally defining the fourth series of characteristics, include, among others: original objective upon first entering graduate school; rationale for selecting the graduate school from which the doctorate was awarded; publication of any research reports prior to the receipt of the doctorate; and a range of opportunities to obtain research experiences.

The test statistic used in analyses of data is the Chi-Square Test. Level of significance is at the .05 level (or below).

The chapter has six sections. The first is an overview of some programs and activities for training in research undertaken prior to the receipt of doctorate. Four sections present the results of some of the analyses of the data. Section six provides a summary of the findings presented in the chapter. (In Appendix G of the report additional tables are given which represent data for significant results on at least one of the four patterns for potential commitment to research, according to 20 variables that are not discussed in the text of the chapter.)

A. An Overview of Programs and Activities for Training in Research in Which the 1964 Doctoral Recipient in Education Participated Prior to the Receipt of the Doctorate

According to the questionnaire survey of the 1964 doctoral recipients in education by the University of California (Berkeley), the returned useable-sample numbered 1750. These respondents had received either the Ed.D. or the Ph.D. in education from 99 graduate institutions of education during the calendar year of 1964. The purpose of the overview is to provide some descriptive statistics on a few variables that describe the 1964 doctoral recipient in education.*

According to the pattern, publication of a research study closely related to the subject of the dissertation, only 18 percent of the respondents noted an affirmative. Slightly more than four out of ten doctoral recipients (42 percent) stated that they engaged in research projects during the first year following the receipt of the doctorate. The range of preferences for work in doing research now has the following order of frequency: jointly with an associate (24 percent); individually (22 percent); no preference (21 percent); as a member of a team (14 percent); with one or more assistants (11 percent); and as a leader of a team (8 percent). Only 123 individuals reported that 50-100 percent of their professional time was devoted to research.[2] Stated another way, on the average, 1.24 doctoral recipients per graduate institution of education entered positions immediately following the receipt of the degree where they devoted 50-100 percent of their professional time to research.

Only slightly over two out of ten doctoral recipients received their degree at the age of 32 or younger. It seems that the field of education has predominantly more doctoral candidates who begin their graduate work rather late in life. Buswell verbalized the concern of the age factor: "If departments of education continue at the same rate of change as is evidenced here for the last ten years it will be 103 years before the mean age of doctors in education is reduced to the median age reported for other social sciences, and it will be an additional 72 years before the mean age for education is reduced to the median age for the physical sciences..." (23, p. 41).

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*Percentages reported in this chapter and in Appendix G are based on respondents who answered the item(s) under consideration; that is, all non-respondents to a question(s) are omitted from the computations.

Heterogeneity reflects the academic patterns of the 1964 doctoral recipients in education. For example, although one-third (31 percent) had education as the major subject for the undergraduate degree, almost nine out of ten (85 percent) had had at least one undergraduate course in the department of education. Almost two out of ten represented for the Bachelor's degree the major subjects of humanities (18 percent) and the combined fields of sociology, economics, and other social science, including history (17 percent). Fifteen percent had the physical and biological sciences (as well as mathematics) as their undergraduate major subjects; 12 percent represented a major subject termed "other." Finally, slightly less than one out of ten had psychology as their undergraduate major field (7 percent).

Diversity represents the patterns for taking courses whose primary purposes are to teach research techniques and, perhaps, to help develop a research orientation. Slightly less than one out of ten (6 percent) had no courses in statistical methods and slightly more than one out of ten (14 percent) had at least four courses. Two out of ten recorded three courses. Most of the respondents (59 percent) had one to two courses. Whereby 12 percent recorded no courses in research methodology, only four percent had at least four courses. Four out of ten (41 percent) had only one course. The categories of two and three courses in research methodology were represented by 34 and 8 percent of the respondents, respectively. For courses taken in college mathematics, the mode is no courses with 28 percent of the cases. About two out of ten noted one or two courses (18 percent and 22 percent, respectively). One out of ten took three courses; and 22 percent took at least four courses. As one will see later, the number of courses taken in the above subjects does differentiate the respondents on their patterns for potential commitment to research.

Taking graduate courses outside the department of education is the rule rather than the exception. Slightly less than one out of ten stated that they had not had this type of experience. Slightly more than four out of ten had taken ten courses or more in departments outside the graduate institution of education. Almost six out of ten had taken these courses because they were required to do so. Another reason offered for taking such courses was the content of the courses was more "meaty" than that of courses in education; 16 percent agreed to this factor.

The respondents were given a checklist of seven items to assess the particular kinds of values contributed by the courses taken outside the department of education. Almost four out of ten felt that the courses were not of any particular value as training for research. However, 35 percent stated that the courses taught new techniques of research not encountered in the courses in the department of education. Slightly over two out of ten (22 percent) felt that these courses emphasized a higher level of scholarly research than in the courses in education.

The respondents were also asked, "in graduate courses outside the department of Education, did you feel that the professors were less interested in your work than if you had been a regular student in their departments?" Slightly over one-fourth agreed. Implications of such assessments for effects on potential commitment to research need further research.

Additional data give support that further research is needed to assess the effects on learning and potential commitment to research by graduate students in education, according to the variety of environmental conditions that reflect taking graduate courses outside the department of education. According to the 1965 questionnaire survey of the faculty of sociology and psychology graduate departments in the division of arts and sciences of universities in the United States, almost nine out of ten sociologists and psychologists (86 and 87 percent, respectively) had taught graduate students of education in their courses. When queried about the performances of graduate students in education as compared with other graduate students, no group thought the students in education were better. One-third of the sociology professors and one-fourth of the psychologists checked the category of no difference. Thus, predominantly the professors of these two departments outside schools of education felt the academic performance was on the average poorer by graduate students in education. Rationale for the poorer performance included, among others, an inadequate background in the subject matter and in research, intellectual incompetency, an inability to conceptualize, and a too practical orientation. Rationale for recommending one of their own undergraduate or graduate students to transfer to the graduate institution of education included, among others, an inability of the student to perform the graduate work in that particular behavioral science department, the student's ability to meet more easily the standards and requirements in the graduate department of education which are not as stiff, and the student's primary interests better met by the field of education.

Data presented in the above paragraph elicit two issues. First, if professors of the behavioral science departments do, in fact, have a mental set that graduate students in education have predominantly poor performance, what kinds of effects on learning and research training do such environmental conditions create for graduate students in education? Second, although not germane to this report, it seems rather puzzling that some professors refer students who are not meeting their own departmental standards to the graduate institution of education. According to this type of rationale, what kinds of needs are being met?

Two variables operationally define the time-patterns during graduate work by the 1964 doctoral recipient. They are the number of months which represent the longest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received and the number of semesters the individual was a full-time student during his graduate work. Slightly over two out of ten (22 percent) registered for their longest period of continuous full-time residence either no months or the combined period of six and nine months. Eighteen percent noted the combined period of 12 and 15 months. Almost four out of ten (38 percent) had at least 18 months of continuous full-time residence. Diversity of time-patterns is also shown by the measure of the number of semesters as a full-time student. Whereby slightly over one out of ten (13 percent) registered no semesters as a full-time student, almost two out of ten (18 percent) had at least seven semesters. Twenty-one percent had the comparable of one academic year. Slightly over one-fourth (26 percent) represented three to four semesters as a full-time student. And 22 percent had the comparable of three academic years. As might be expected, the time-patterns do distinguish the individuals on their types of research activities during the first year following the receipt of the doctorate.

The third major series of characteristics of the doctoral recipients concern the patterns for economic resources. Four variables operationally defining this type of individual characteristic are: the number of years spent in teaching or other school experiences prior to the receipt of the doctorate; the number of years the respondent had a full-time job between the first enrollment as a graduate student and the award of the doctorate in education; the receipt of a research scholarship or assistantship; and respondent's being in debt for his education at the time of receiving the doctoral degree.

Four time-periods were given respondents to check as the number of years spent in teaching or other school experience before the receipt of the doctorate. Forty-six percent had at least eleven years in this professional activity. For the time-periods of one to five and of six to ten, 23 percent and 27 percent are represented, respectively. Only three percent checked the period of no years.

Between the first enrollment as a graduate student and the award of the doctoral degree, only eight percent had no years of a full-time job. Eleven percent had between one and two years of employment; 15 percent recorded between three and four years of full-time employment. Finally, almost two-thirds of the respondents (65 percent) had as many as five years or more. The extensive number of years in a full-time job may reflect the lack of sufficient funds to finance one's education during a concentrated and specified period of time.

The above point may be supported by the fact that almost four out of ten (38 percent) had no scholarship, fellowship, or assistantship of any kind. Slightly over one-third (36 percent) did have a teaching assistantship and(or) fellowship requiring no service from them. Only one-fourth (26 percent) had a research scholarship or assistantship--and almost half had only one to two semesters of this type of remuneration. Almost three out of ten (29 percent) had the comparable of one and a half to two academic years of a research scholarship or assistantship. The remaining 21 percent had at least five semesters.

The fourth major series of characteristics deals with certain values and processes of decision making for activity in research prior to the receipt of the doctorate. Variables operationally defining this series of individual characteristics include, among others, the original objective upon first entering graduate school, rationale for choosing the graduate school from which the doctoral degree was received, and a range of opportunities to obtain experiences in research.

Data based on these characteristics that represent processes of decision making for activity in research tend to support the assumption that graduate students in education may not visualize educational research as an academic pursuit in its own right. For example, slightly over eight out of ten (81 percent) first decided to study for the doctoral degree after college graduation. And upon first entering graduate school the original objective of two-thirds of the respondents (68 percent) was no more than a master's degree. Furthermore, almost six out of ten (57 percent) stated that the research opportunities provided by the graduate institution from which the doctorate was received were of no importance in their selection of that school. And only 12 percent considered such a rationale of highest importance.

According to the actual opportunities to obtain research experiences undertaken by the respondents prior to the receipt of the doctorate, data indicate that not as many as might have been expected did avail themselves of the opportunities to obtain routines, skills, and sensitivities in research. While slightly more than four out of ten (44 percent) had no research experience prior to the receipt of the doctorate, slightly less than one out of ten (six percent) had a combination of at least two types of opportunities to obtain research experiences. The latter category consists of a combination of at least two of the following types of opportunities: exclusively a research assistant to a professor; exclusively a research assistant in a research organization; and exclusively a research experience termed "other."*

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*An extensive description of this research experience termed "other" was not given in the codebook for the questionnaire.

(The proportion of respondents that are represented for each of the three exclusive types of opportunities in research experiences are 12, 7, and 30 percent, respectively.) Almost one-fourth (23 percent) participated in research projects in a department outside the graduate institution of education. A comparable proportion (24 percent) stated that they had published either individually or by joint authorship a research report prior to the completion of the doctoral program. In summary, the descriptive statistics lend support for the concern that career decisions for research activity may be rather tenuous.

In summary of the overview, data tend to support the following assessments. Predominantly most of the 1964 doctoral recipients in education decided rather late in life to begin graduate study for a doctoral degree. Slightly less than one-third had upon first entering graduate school the original objective of a doctoral degree either in education or in another department. For more than the majority of the doctoral recipients, consideration of the research opportunities provided by the graduate school from which the doctorate was received was of no importance in their selection of the school.

Although academic courses alone do not insure the learning of research techniques, it does seem that relatively few of the respondents represented a sustained involvement in courses that may help to develop a research orientation as well as to precipitate (or sustain) decisions on the part of the student to become involved in research activities. For example, slightly more than one out of ten had taken at least four courses in statistical methods. Two out of ten had taken at least three courses in research methodology. And slightly over two out of ten had taken at least four courses in college mathematics.

Almost all of the 1964 doctoral recipients had registered for at least one graduate course taught outside the department of education. More than the majority stated that they were required to take these graduate courses. However, almost two out of ten registered for these courses because they found the content more "meaty" than that of courses in education. Assessments by the respondents of the advantages and disadvantages experienced in taking such courses indicate the need for further research on this type of academic experience.

Data provide evidence for the concern that many doctoral students in education do not become involved in their graduate studies over a relatively long period of continuous full-time residence in the graduate institution. For example, slightly over one-half of the doctoral recipients had between no months and one calendar year as the longest period of continuous full-time residence in the institution from which the doctorate was received.

Data also seem to support the general concern that educational research may not be perceived as an academic pursuit in its own right by many students in education. For example, prior to the receipt of the doctorate, slightly over seven out of ten had spent at least six years in teaching or other school experience. Slightly more than four out of ten had had no research experience before receiving the doctoral degree. Almost four out of ten had received no type of assistantship or scholarship (fellowship) during graduate work. Only one-fourth had a research assistantship or scholarship and almost half of these had at most two semesters of this type of remuneration. Less than one out of ten had recorded a combination of at least two distinct types of opportunities for obtaining research experiences. In summary, if one considers the increased investments to research during the past decade by universities and outside agencies such as the federal government, it appears that only a relatively few of the 1964 doctoral recipients had had rather extensive or intensive involvement in research experiences prior to the receipt of the doctoral degree.

In the final analysis of preparation for research, emphasis is on the doctoral recipients who, in fact, undertake activities in research. Through discerning characteristics of the recent doctoral recipients that yield favorable directions for patterns for potential commitment to research, guidelines for future models for training in research may become more refined and effective. The following four sections examine some of the patterns, according to the four major series of characteristics discussed in the overview.

B. Patterns for Potential Commitment to Research According to Four Major Series of Characteristics of the 1964 Doctoral Recipients in Education

Based on the test statistic, the Chi-Square Test, significant results occur for at least one of the four patterns for potential commitment to research. According to some of the characteristics and the type of doctorate in education received by the respondent, significant results again occur for at least one of the patterns.

In the text of the chapter, data are presented for 17 of the 37 variables that are used in this study to define the four major series of characteristics. In Appendix G, examples are given on which significant results occur for at least one of the patterns, according to each of the remaining 20 variables. Also, in Appendix G, there is a summary of the results for each of the four patterns, according to each of the 37 variables. Included in the summary are the results for each pattern, according to each of the 37 variables and the type of degree earned.

As might be expected, the type of doctorate in education earned by the respondent does differentiate the individuals on three of the four patterns of research activity during the first year following the receipt of the doctoral degree. For example, proportionately more who earned the Ph.D. engaged in research projects, devoted a high proportion of their professional time to research, and published a research study closely related to the topic of the dissertation. Data are given in Table 6.1 (page 355) for these three patterns.

Data shown in Table 6.1 perhaps set the "stage" for analyses of the patterns, according to the remaining characteristics considered in the study. In other words, anticipated directions on the patterns, in general, tend to be slightly more favorable by those who earned the Ph.D., not the Ed.D.

In many cases, the assumption on the direction of results is met. However, the reader will note in the text of the chapter some exceptions--exceptions that may provide new nuances to the debate on differences (real or unreal) between the two types of doctorate in education.

TABLE 6.1.--Proportion of 1964 doctoral recipients in education, according to the type of degree earned and three patterns for potential commitment to research.*

Patterns for Research Commitment	Type of Doctorate Earned				Percent Difference
	(N)	Ph.D.	(N)	Ed.D.	
1. Engaged in research projects during the first year following the receipt of the degree:	(577)		(1150)		
Yes		50%		38%	12%
2. Percent of professional time spent in research:	(563)		(1130)		
Low (0%)		51%		59%	- 8%
Medium (1-49%)		38%		35%	3%
High (50-100%)		11%		6%	5%
3. Published a research study related to the topic of their dissertation:	(574)		(1151)		
Yes		22%		15%	7%

*Numbers in parentheses represent the base for percentages and vary because non-respondents to questions are omitted from the computations.

1. Patterns for Potential Commitment to Research According to the Personal Characteristic, Age at the Completion of the Doctoral Program

There are two versions for the variable of age at the completion of the doctoral program. The first version is a dichotomized variable: young (39 or under) and old (40 or over). The second version has three categories; namely, young (32 or under), middle (33-39), and old (40 or over). Each version yields significant results for each of the four patterns. Each version and the type of degree earned provide significant results for each of the four patterns. (There is one exception; significance does not occur for the pattern of preference for work in doing research; according to the type of degree earned and the trichotomized version of the variable.)

Individuals who completed their doctoral program between 33 and 39 tend slightly more than those who earned the degree at 40 or over and tend slightly less than doctoral recipients who completed the doctoral requirements at 32 or under to engage in research projects during the first year following the receipt of the doctorate (43 percent vs. 33 percent and 54 percent, respectively).

According to each level of this age-factor, slightly more doctoral recipients of the Ph.D. tend to undertake this research activity. Similarity exists more between the young recipient of the Ed.D. and the middle-aged recipient of the Ph.D. rather than the young recipient of the Ph.D. Slightly less differentiation tends to occur between the two types of doctoral recipients who completed the program at 40 or over (7 percent). More differentiation tends to exist between the two types of doctoral recipients who completed their requirements for the degree at 32 or under (15 percent). Thus, percent difference between the two extreme age-levels (young minus old) tends to be slightly larger for those awarded the Ph.D. (25 percent vs. 17 percent). Table 6.2 presents the data.

TABLE 6.2.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate, according to the age at the completion of the doctoral program and the type of degree earned.

Proportion Who Did Engage in Research Projects

	Type of Doctorate			
Age	Ph.D.	(N)	Ed.D.	(N)
(1) ≤ 32	63%	(169)	48%	(207)
(2) 33-39	49%	(244)	40%	(495)
(3) ≥ 40	38%	(164)	31%	(448)

Direction of data for the pattern of professional time spent in research is more favorable by doctoral recipients who completed their program-requirements at 32 or under. In other words, proportionately less tend to spend no time in research and proportionately more tend to record a high proportion of professional time in research.

Data indicate that differences between the two types of doctoral recipients tend to be slightly more for those awarded the degree at 32 or under than for either of the remaining two age-groups. Percent differences for the low proportion of professional time spent in research between the two types of doctoral recipients for each age-level are -20, -5 and 3 percent, respectively; percent differences for the high proportion of time devoted to research are 9, 4 and 1 percent, respectively. According to the type of degree earned, percent differences on both the low and high categories for professional time spent in research tend to be larger between the two extreme age-groups for the doctoral recipients of the Ph.D.; percent differences are: -33 percent vs. -10 percent for the low category of the pattern and 12 percent vs. 4 percent for the high category. Tables 6.3a-6.3b (page 359) provide the data of this second pattern for research activity during the first year following the receipt of the doctorate.

According to the two age-levels of 33 to 39 and 40 or over, similarity exists on the pattern of publishing a research study closely related to the topic of the dissertation (16 and 15 percent, respectively). As might be expected, the younger doctoral recipient tends slightly more to reflect the favorable direction of the pattern (26 percent).

According to each age-level, slightly more doctoral recipients of the Ph.D. tend to publish such a study. However, differentiation between the two types of doctoral recipients at each age-level is really quite similar: percent differences for the categories of $\leq$ 32, 33-39, and $\geq$ 40 are 8, 5, and 7 percent, respectively. According to the type of degree earned, percent differences between the two extreme age-groups are also quite similar: 10 and 9 percent for the doctoral recipients of the Ph.D. and the Ed.D., respectively. However, in the final analysis, it is still the young doctoral recipient of the Ph.D. in education who reflects the favorable direction of the pattern slightly more than any of the remaining groups. Table 6.4 (page 360) presents the data for this third pattern for potential commitment to research.

TABLE 6.3a.--Proportion of 1964 doctoral recipients in education according to the age at the completion of the doctoral program and the proportion of professional time devoted to research during the first position immediately following the receipt of the degree.

Proportion of Professional Time	Age at the Completion of Doctoral Program		
	≤32	33-39	≥40
Low (0%)	43%	59%	63%
Medium (1-49%)	44	35	32
High (50-100%)	13	6	5
	100%	100%	100%
	(366)	(724)	(603)

TABLE 6.3b.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the age at the completion of the doctoral program and the type of degree earned.

Proportion of Time Spent in Research

	Type of Doctorate Earned						Percent Difference	
	Ph.D.			Ed.D.				
Age	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
(1) ≤32	32%	18%	(166)	52%	9%	(200)	-20%	9%
(2) 33-39	55%	9%	(237)	60%	5%	(487)	-5%	4%
(3) ≥40	65%	6%	(160)	62%	5%	(443)	3%	1%
Percent Difference:								
(1)-(3)	-33%	12%		-10%	4%			

TABLE 6.4.--Proportion of 1964 doctoral recipients in education who published a research study that was closely related to the topic of their doctoral dissertation, according to the age at the completion of the doctoral degree and the type of degree earned.

	Type of Doctorate Earned			
Age	Ph.D.	(N)	Ed.D.	(N)
(1) ≤ 32	30%	(169)	22%	(202)
(2) 33-39	19%	(242)	14%	(495)
(3) ≥ 40	20%	(163)	13%	(454)

Once more according to the age at completion of the doctoral program, doctoral recipients are significantly different on a fourth pattern for research activity; namely, their preference for work in doing research. Whereby the young and the middle-aged respondents most frequently choose working jointly with an associate (28 and 24 percent, respectively), older doctoral recipients prefer working independently (26 percent). Compared to the two former groups, slightly less of the older group prefer working either with one or more assistants (8 percent *vs.* 13 and 12 percent) or as a leader of a team (6 percent vs. 8 and 9 percent). On the other hand, slightly less of the young doctoral recipients tend to prefer being a member of a team (11 percent *vs.* 14 and 16 percent). Slightly more tend to prefer working jointly with an associate (28 percent *vs.* 24 and 21 percent). As will be noted in the remainder of the text, slightly more of the doctoral recipients who tend to have characteristics considered unfavorable for development in research commitment tend to prefer working by themselves. This is the tendency for the older doctoral recipients

(26 percent vs. 20 and 18 percent). Data are given in Table 6.5 for the fourth pattern.*

TABLE 6.5.--Proportion of 1964 doctoral recipients in education, according to the age at the completion of the doctoral program and preference of work in doing research.

	Age		
Preference of Work	≤32	33-39	≥40
With one or more assistants	12%	13%	8%
As a member of a team	11	14	16
As a leader of a team	9	8	6
Individually	18	20	26
Jointly with an associate	28	24	21
No preference	22	20	22
	100%	99%	99%
	(368)	(719)	(609)

In summary of this section, data provide evidence that the age at the completion of the doctoral program differentiates the 1964 doctoral recipients in education on their patterns for potential commitment to research. Specifically, young doctoral recipients (32 or under) tend slightly more to pursue during the first year following the receipt of the doctorate the following patterns: participation in research projects; publication of a research study closely related to the topic of the dissertation; and a high proportion of professional time spent in research. For preferences for work in doing research, they reflect slightly less working independently and slightly more working jointly with an associate and as a leader of a team. As compared to any other group, young doctoral recipients of the Ph.D. in education tend slightly more to undertake these patterns. In general, young doctoral recipients of the Ed.D. tend to be quite similar to the middle-aged (33-39) doctoral recipients of the Ph.D. According to each pattern, differentiation between the two types of doctoral recipients in education tends to be slightly larger for those who completed the doctoral requirements at 32 or under and slightly smaller for those who completed the requirements at 40 or over. In other words, doctoral recipients of the Ph.D. and the Ed.D. who completed the doctoral program at 40 or over tend to have similar patterns for research activity. In the final analysis of the personal characteristic of age at the completion of the doctoral program, data lend evidence that, if development of professional personnel in educational research be emphasized by graduate institutions of education, recruitment procedures should consider the relevancy of obtaining doctoral students who are still in their twenties.

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*Recall that significant results do not occur at the .05 level for this pattern, according to the type of degree earned and the age at completion of the doctoral program.

The next section covers four sets of variables operationally defining the academic patterns of the 1964 doctoral recipients.

2. Patterns for Potential Commitment to Research According to the Academic Patterns of the 1964 Doctoral Recipients in Education

Four sets of variables comprise the general heading, the academic patterns. They are: some characteristics of graduate institutions of education from which the doctorate was awarded; major subject areas and courses taken by the respondents; evaluation of the academic program; and the time-patterns representing the extent of involvement in the graduate work by the doctoral recipients.

Patterns for potential commitment to research by recent doctoral recipients are examined, according to eleven organizational variables of the graduate institution of education which awarded the doctorate in education. The variables include: type of legal control; a scale for university reputation; level of admission to the graduate program (proportion of students who applied to the graduate program for the academic year of 1963-64 that were accepted); formal entrance requirements for admission to the graduate program; professional experience as a formal entrance requirement for admission to the graduate program; the type of doctorate in education administered by the graduate institution as well as the proportion of registered doctoral students working for the Ph.D.; type of graduate preparation emphasized by the institution; the type of program for training in research provided by the graduate institution of education; the existence of a research organization affiliated with the institution; the proportion of the graduate faculty who received most of their training for their highest degrees outside any graduate institution of education (an index of interdisciplinarily trained faculty); and the proportion of the graduate faculty doing research.

According to the type of legal control on the university to which the graduate institution of education belongs, significant results do not occur for any of the four patterns for potential commitment to research. However, according to this institutional variable and the type of degree earned, differentiation occurs for three patterns of research activities during the first year immediately following the receipt of the doctoral degree; namely, participation in research projects, proportion of professional time devoted to research, and publication of a research study closely related to the topic of the dissertation.*

In general, differentiation on each of the three patterns exists slightly more, according to the two types of degrees received rather than according to the type of legal control. For example, almost four out of ten (38 percent) who received the Ed.D. from both publicly and privately controlled institutions engaged in research projects. Similarity of proportions exists for those who earned the Ph.D. from publicly and privately controlled institutions: 50 and 48 percent, respectively. Thus, differentiation between the two types of doctoral recipients is quite similar, according to each type of legal control.

The same direction of results occurs for the pattern of publication of research study. In other words, similarity on the pattern exists for the doctoral recipients of the Ed.D. from both public and private universities (17 percent and 14 percent, respectively). Doctoral recipients of the Ph.D. are also quite comparable from publicly and privately controlled universities (23 percent and 21 percent, respectively). Again, for each nominal level for the variable of legal control, percent difference between the two types of doctoral recipients is favorable for those awarded the Ph.D. in education.

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*Since some of the 17 variables yield significant results for more than one pattern, data for all the patterns do not appear in tables. Selected examples are used. For the remaining patterns for which a variable yields significance, discussion of the results appears in the text.

Doctoral recipients of the Ph.D. in education from both public and private universities are quite similar on their varying proportions of professional time spent in research. The same statement holds for those who earned the Ed.D. According to each type of legal control, those awarded the Ph.D. tend slightly more to represent the favorable directions of the pattern. For the low proportion of professional time spent in research, slightly more differentiation occurs between the two types of doctoral recipients in publicly controlled schools. For the high proportion of professional time, slightly more differentiation exists between those awarded the Ph.D. and the Ed.D. in privately controlled universities. Data are given in Table 6.6.

TABLE 6.6.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the type of legal control of the university from which the doctorate was received.

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference:	
Type of Legal Control	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
Public	51%	10%	(397)	60%	6%	(774)	-9%	4%
Private	52%	13%	(164)	58%	5%	(352)	-6%	8%
Percent Difference:	-1%	-3%		2%	1%			

According to the type of degree administered by the graduate institution of education, significance occurs for only one pattern;

namely, the publication of a research study closely related to the topic of the dissertation. Doctoral recipients from institutions administering only the Ed.D. tend to publish such a study slightly less than those awarded the Ph.D. from institutions administering only this degree and slightly more than the doctoral recipients from graduate schools granting both the Ph.D. and Ed.D. (20 percent vs. 24 and 16 percent, respectively).

According to the proportion of doctoral students working for the Ph.D., no significant differentiation occurs on any of the four patterns. The same conclusion holds, according to the type of degree earned by the respondents and the proportion of doctoral students working for the Ph.D. in education.

The level of admission to the graduate program yields significance for the pattern of proportion of professional time spent in research. The same conclusion holds, according to this institutional characteristic and the type of degree earned. Data show that doctoral recipients from graduate institutions with a closed level of admission tend slightly less to record no professional time in research (52 percent vs. 59 percent) and tend slightly more to spend a high proportion of professional time in this activity (10 percent vs. 5 percent).

According to each level of admission, slightly less of those awarded the Ph.D. tend to record no professional time in research. Differentiation on the high category of the pattern tends to be slightly larger between those awarded the Ph.D. and the Ed.D. from institutions with a closed level of admission (percent difference of 10 vs. percent difference of one). In fact, doctoral recipients of the Ed.D. who matriculated at institutions with a closed level of admission tend to be very comparable to doctoral recipients awarded the Ph.D. from institutions with an open level of admission. Table 6.7 provides the data.

TABLE 6.7.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and level of admission to the graduate institution of education.

Proportion of Time Spent in Research								
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference:	
Level of Admission	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
Closed (20-76%)	48%	16%	(194)	54%	6%	(378)	-6%	10%
Open (77-98%)	56%	5%	(109)	60%	4%	(196)	-4%	1%
Percent Difference:	-8%	11%		-6%	2%			

Although the institutional requirement of professional experience prior to admission to the graduate program does not differentiate the respondents on any of the four patterns, this organizational variable with the type of degree earned does yield significant results for two patterns of research activity during the first year following the receipt of the doctorate. They are the participation in research projects and the proportion of professional time devoted to research.

Almost two thirds (65 percent) of the doctoral recipients of the Ph.D. from institutions requiring professional experience prior to graduate admission engaged in such projects. Slightly over four out of ten (45 percent) of the recipients of the Ph.D. from institutions with no requirement of professional experience prior to admission undertook this form of activity. No matter if the graduate institutions have or do not have this type of requirement, four out of ten of those awarded the Ed.D. engaged in research projects.

Doctoral recipients who earned the Ph.D. from schools with this formal entrance requirement rank first on this pattern; proportionately less record no time (46 percent) and proportionately more spend a high proportion of time in research (22 percent). The rank of second on the favorable directions of the pattern belongs to the doctoral recipients of the Ph.D. from institutions having no entrance requirement of professional experience. No matter if professional experience is or is not required prior to graduate admission, doctoral recipients of the Ed.D. tend to be similar on both the low and the high categories of professional time spent in research (percent differences are -2 and -3 percent, respectively). Compared to institutions without this formal entrance requirement, institutions with this requirement provide a slightly larger differentiation between the two types of doctoral recipients on both the low and high categories of professional time devoted to research. Data are given in Table 6.8 (page 369).

Why do the doctoral recipients who earned their Ph.D. from graduate institutions with this entrance requirement tend to become more involved in research activities during the first year following the receipt of the doctorate? Three possible explanations are entertained. First, as discussed in chapter three, some graduate institutions that are classified as having this requirement of professional experience prior to graduate admission may, in fact, have some

TABLE 6.8.--Proportion of 1964 doctoral recipients in education who spend varying percents of their professional time in research, according to the type of degree earned and the institution's requirement of professional experience for admission to the graduate program from which the doctorate was received.

Proportion of Time Spent in Research

Type of Doctorate Earned

Professional Experience Required	Ph.D.			Ed.D.			Percent Difference:	
	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
Yes	46%	22%	(50)	56%	4%	(348)	-10%	18%
No	53%	10%	(350)	58%	7%	(403)	-5%	3%
Percent Difference	-7%	12%		-2%	-3%			

departments that waiver the requirement. The individuals represented in this study may be examples of such departmental procedures. Thus, the measure is not as absolute as presented in the table. Second, emphasis on professional experience and its relationship to patterns for potential commitment to research may be more important as an individual characteristic rather than as an organizational variable. As one will note later in the chapter, only when doctoral recipients prior to the receipt of the doctorate have had many years (six to ten or at least eleven years) in teaching or other school experience will the direction for favorable patterns for research commitment tend to be lessened. Thus, even if individuals attended graduate institutions that have no formal admission requirement of professional experience, some may still prior to the receipt of the doctorate have had many years in teaching or other school experience. Third, since graduate institutions that have this formal entrance requirement tend to have more doctoral candidates registered for the Ed.D. than for the Ph.D., perhaps institutional efforts are more concentrated that their registered candidates for the Ph.D. in education do, in fact, obtain a large range of research experiences that provide reinforcement for career decisions in which professional time is devoted to research. In other words, perhaps more concentrated efforts are made by the institution to distinguish the two types of doctoral degrees.

For three patterns for potential commitment to research significant results occur according to the type of graduate preparation emphasized by the institution from which the respondents received their doctorate. (This holds for the trichotomized as well as the dichotomized version of the variable; namely, research alone x research plus others x non-research; and research [alone plus others] x non-research.) The patterns are participation in research projects, proportion of professional time devoted to research, and the publication of a research study closely related to the subject of the dissertation. Also, according to the type of degree earned and the type of graduate preparation emphasized (dichotomized version), significant results occur for the two patterns of participation in research projects and proportion of professional time spent in research.

Slightly more doctoral recipients who matriculated with institutions emphasizing graduate preparation for research tend: to publish a research study closely related to the topic of the dissertation (22 percent vs. 16 percent); to engage in research projects (52 percent vs.

41 percent); and to spend at least some professional time in research as well as a high proportion of time (53 percent vs. 43 percent and 12 percent vs. 6 percent, respectively).

Doctoral recipients awarded the Ph.D. and the Ed.D. from institutions that emphasize graduate preparation for research rank first and second on the pattern of participation in research projects (55 percent and 48 percent). A 10 percent difference in the pattern exists between those awarded the Ph.D. from institutions with an emphasis of graduate preparation for research and from institutions without this emphasis. A comparable percent difference exists for those awarded the Ed.D. from the two types of institutional settings (9 percent). In each type of institutional setting the doctoral recipients of the Ph.D. tend slightly more to engage in the research project. However, those awarded the Ed.D. from institutions with research emphasized as the graduate preparation tend slightly more to undertake this pattern than those who earned the Ph.D. from institutions with graduate preparation for either teaching or administration (or both).

The direction of results discussed for the previous pattern generally holds for the pattern of proportion of professional time spent in research. Slightly less of the doctoral recipients of the Ph.D. and the Ed.D. from institutions with graduate preparation for research tend to record no professional time in research. Thus, they rank first and second for at least some professional time in research (54 and 53 percent). Compared to those awarded the Ph.D. from institutions stressing graduate preparation for teaching or administration, doctoral recipients of the Ed.D. from institutions emphasizing research as the graduate preparation tend slightly less to record no professional time in research (47 percent vs. 54 percent); they appear, however, quite similar on the high proportion of time (10 percent vs. 11 percent). On both the low and the high categories of professional time spent in research, percent differences between those awarded the Ed.D. from each type of institutional setting are -11 and 6 percent, respectively. Percent between those awarded the Ph.D. from each type of institutional setting are -8 percent for the low category of the pattern and 3 percent for high category.

In summary, data lend evidence that less differentiation tends to exist between the two types of doctoral recipients from an institutional setting that stresses graduate preparation for research. Table 6.9 provides the data.

TABLE 6.9.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research according to the type of degree earned and the type of preparation emphasized in the graduate institution of education from which the doctorate was received.

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference:	
Type of Preparation Emphasized	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
Research (alone plus others)	46%	14%	(136)	47%	10%	(121)	-1%	4%
Non-research	54%	11%	(257)	58%	4%	(592)	-4%	7%
Percent Difference	-8%	3%		-11%	6%			

The institutional activity of providing a program for training in research, also, plays a rather dynamic part in the patterns of potential commitment to research by doctoral recipients in education. According to this organizational variable, significance occurs for the pattern of proportion of professional time devoted to research. (This holds for both the trichotomized and the dichotomized version of the variable; namely, special program x part of the regular degree program x no program; and yes (special + part of...degree program) x no.) According to the type of degree earned and both versions of the organizational activity, significance occurs for the above pattern as well as for the pattern of participation in research projects during the first year following the receipt of the doctorate. Only according to the second version of the variable and the type of degree earned, does significance occur for the pattern of publication of a research study. (Significance for the fourth pattern of preference for work in doing research now does not occur, according to any of the versions of the variable.)

Doctoral recipients awarded the Ph.D. from institutions with a training program and from institutions without a training program rank first and second on the pattern for publishing a research study (24 percent and 19 percent, respectively). Differentiation on the pattern tends to be slightly larger between the two types of doctoral recipients from institutions with a training program than from institutions without a program (8 percent _vs._ 3 percent).

The more favorable direction for results on the pattern of engaging in research projects is in institutions that have the training program for research as a part of the regular degree program. However, according to each nominal value for the institutional program, doctoral recipients of the Ph.D. tend slightly more to engage in research projects. According to each nominal value for the institutional program, percent difference between the two types of doctoral recipients is quite similar. Data are given in Table 6.10.

TABLE 6.10.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate according to the type of degree earned and the type of program for training in research provided by the graduate institution of education from which the doctorate was received.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Type of Training Program	Ph.D.	(N)	Ed.D.	(N)
(1) Special	51%	(133)	38%	(326)
(2) Part of regular degree program	56%	(125)	44%	(138)
(3) No	50%	(125)	39%	(302)

Almost six out of ten doctoral recipients from institutions with no training program record no professional time spent in research (58 percent). Slightly over one-half (53 percent) of those from institutions with a special program noted no professional time in research. Half of doctoral recipients from institutions that have training in research as a part of the regular degree program represent the low category of this pattern. The latter group tends slightly more to spend a high proportion of professional time in research (13 percent *vs.* 8 percent and 7 percent for those from institutions with a special program and no program, respectively).

On both the low and the high categories of the pattern percent differences tend to be slightly larger between the two types of doctoral recipients from institutions with research training as a part of the regular degree program: (-8 percent and 9 percent vs. -6 percent and 5 percent for institutions with a special program vs. -6 percent and 4 percent for institutions with no program). Data are shown in Table 6.11.

TABLE 6.11.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research according to the type of degree earned and the type of program for training in research provided by the graduate institution of education from which the doctorate was received.

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference	
Type of Training Program	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
(1) Special	48%	12%	(128)	54%	7%	(319)	-6%	5%
(2) Part of regular degree program	43%	17%	(123)	55%	8%	(137)	-8%	9%
(3) No	54%	10%	(121)	60%	6%	(300)	-6%	4%
Percent Difference (2)-(3)	-11%	7%		-5%	2%			

There are two issues about the institutional activity of a program for training in research. First, as has been discussed in chapter three, institutions whose training program is a part of the regular degree program tend to provide the more favorable results. As stated previously, this type of program represents the traditional pattern for training doctoral students. With the increased investments of financial resources for special programs it will be interesting to see if changes in trends of results occur for production of researchers and patterns for research commitment. The second issue concerns the assumption that this institutional activity and its relationship tp patterns for potential commitment to research may be more important as an individual characteristic. In other words, the saliency of this type of institutional activity exists only if the doctoral recipients had had this type of research experience.

Two characteristics are presented to describe the graduate faculty in graduate institutions of education from which the doctorate was received. The first one is an index of interdisciplinarily trained faculty--the proportion of the graduate faculty who received most of their training for their highest degrees outside any school of education. Significance does not occur for any of the patterns, according to this characteristic. The second characteristic represents the proportion of graduate faculty doing research. This variable yields significance for one pattern; namely, the proportion of professional time devoted to research.

Six out of ten doctoral recipients who earned their degrees from institutions with a low proportion of the graduate faculty doing research devoted no professional time in research. Half of those from institutions with a high proportion of the graduate faculty doing research spent no professional time in research. It is this latter type of institutional setting that provides doctoral recipients who tend slightly more to spend a high proportion of their professional time in research (12 percent vs. 5 and 6 percent for institutional settings of low and medium proportions of their graduate faculty doing research, respectively). Data lend evidence that, given an institutional environment where research activity is a relatively important behavioral pattern by the faculty, career decisions by doctoral students for future research activity may be effectively reinforced. Table 6.12 gives the data for this pattern.

TABLE 6.12.--Proportion of 1964 doctoral recipients who spend varying proportions of their professional time in research according to the proportion of graduate faculty doing research in the graduate institution of education where the doctorate was received.*

	Proportion of Graduate Faculty Doing Research		
Proportion of Time Spent in Research	Low (≤ 25%)	Medium (26-49%)	High (50-100%)
Low (0%)	60%	55%	50%
Medium (1-49%)	35	39	39
High (50-100%)	5	6	12
	100%	100%	101%
	(132)	(427)	(194)

*Chi-Square Test is not performed for the pattern, according to the type of the degree earned and proportion of graduate faculty doing research; there are too few cases in three categories.

Patterns for potential commitment to research are examined, according to the major subject area that represented to the respondent's Bachelor's degree and the number of courses taken in college mathematics. The patterns are also analyzed, according to the place where respondents felt courses were mainly taken to learn methods used in doing research.

The major subject area for the Bachelor's degree yields significant results for two of the four patterns. They are the proportion of professional time devoted to research and the preference for work in doing research. According to the major academic subject of the undergraduate degree and the type of doctorate earned in education, significance occurs for two patterns; they are, publication of a research study and participation in research projects.*

Doctoral recipients who had an undergraduate major in education tend slightly less to spend no professional time in research and tend slightly more to record a medium proportion of professional time in the activity. Slightly less of those whose undergraduate major was psychology tend to represent a medium proportion of professional time spent in research; slightly more, however, record a high proportion of time in research. The latter type of doctoral recipients represents the two extremes on the pattern; that is, they are either low or high on the pattern for professional time in research. Table 6.13 (page 379) gives the data.

The major subject area of the Bachelor's degree differentiates the doctoral recipients on their preferences for work in doing research. Doctoral recipients whose undergraduate major was psychology tend slightly more to prefer working with one or more associates and as a leader of a team. However, they tend slightly less to choose to work as a member of a team and individually. Those whose undergraduate major was education tend slightly more to prefer working jointly with an

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*For each of the two remaining patterns, the Chi-Square Test is not performed because of too few cases in some of the categories.

TABLE 6.13.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research according to the major subject of the undergraduate degree.

Proportion of Time Spent in Research	Major Subject* 1.	2.	3.	4.	5.	6.
Low (0%)	54%	59%	56%	56%	60%	60%
Medium (1-49%)	40	26	37	35	34	36
High (50-100%)	6	15	6	9	6	4
	100%	100%	100%	100%	100%	100%
	(514)	(124)	(281)	(245)	(306)	(210)

*Code: Major Subject
1. Education
2. Psychology
3. Sociology + Economics + other Social Sciences, including History
4. Physical and Biological Sciences; Mathematics
5. Humanities
6. Other

associate. Working as a member of a team tends to be chosen slightly more by doctoral recipients whose undergraduate major was in the physical and biological sciences, including mathematics. If doctoral recipients had an undergraduate major either in the combined areas of sociology, economics, and other social sciences, including history or in humanities, then the preference to work individually tends to be checked slightly more. Table 6.14 provides the data for this pattern of preference for work in doing research (see page 380).

Doctoral recipients who were awarded the Ed.D. and had an undergraduate major in psychology rank first on the pattern for publishing a research study closely related to the topic of the dissertation. They are the only group in which doctoral recipients awarded the Ed.D. tend

TABLE 6.14.--Proportion of 1964 doctoral recipients in education according to the major subject of the undergraduate degree and the preference for work in doing research.

	Major Subject*					
Preference for Work	1.	2.	3.	4.	5.	6.
With one or more assistants	11%	17%	9%	12%	10%	11%
As a member of a team	15	7	12	18	15	14
As a leader of a team	7	15	8	8	5	9
Individually	19	16	27	18	27	20
Jointly with an associate	27	22	22	23	22	23
No preference	22	22	21	21	20	23
	101%	99%	99%	100%	99%	100%
	(522)	(121)	(280)	(245)	(310)	(210)

*Code: Major Subject
1. Education
2. Psychology
3. Sociology + Economics + other Social Sciences, including History
4. Physical and Biological Sciences; Mathematics
5. Humanities
6. Other

slightly more than those awarded the Ph.D. to undertake this pattern (27 percent vs. 21 percent). Doctoral recipients who earned the Ph.D. and had undergraduate majors in a field(s) termed "other"* and in education rank second and third on the pattern. Percent differences between the two types of doctoral recipients who had an undergraduate field termed "other" is 11 percent. Percent difference between those with an undergraduate major in education is nine percent. Doctoral recipients who had an undergraduate major in humanities yield an eight percent difference between the two types of doctorate in education (21 percent vs. 13 percent). A five percent difference on the pattern exists between those whose undergraduate major was in the combined fields of sociology, economics, and other social sciences, including history (21 percent vs. 16 percent). Percent difference is almost negligible for those with an undergraduate major in the physical and biological sciences, including mathematics (19 percent vs. 17 percent).

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*The type of field(s) is not specified in the codebook for the questionnaire.

The type of doctorate earned in education and the major subject of the undergraduate degree differentiate the respondents on the pattern for participation in research projects. Doctoral recipients who earned the Ph.D. and had undergraduate majors in psychology and in education rank first and second on the pattern (60 percent and 56 percent, respectively). Percent differences between the two types of doctoral recipients who had these two undergraduate majors is quite large. For those with the major subject of psychology, a percent difference of 13 occurs; for those with education as the undergraduate subject, percent difference is 21. This slightly large differentiation in which direction is more favorable for those awarded the Ph.D. occurs under two other undergraduate major subjects; namely, in the combined fields of sociology, economics, and other social sciences, including history (48 percent vs. 37 percent); and in humanities (48 percent vs. 38 percent). For two undergraduate subjects, differentiation is really almost negligible between the two types of doctoral recipients--a one percent difference exists under each undergraduate field. They are in the physical and biological sciences, including mathematics (43 percent vs. 42 percent); and in a field(s) termed "other" (42 percent vs. 41 percent).

The results based on the major subject of the undergraduate degree of the respondents provide information that is relevant for recruitment procedures for potential trainees in educational research.

Taking courses in college mathematics does not alone guarantee learning research techniques or insure future commitment to research activity. The underlying assumption is that in the process of taking many courses in college mathematics (or other courses emphasizing research techniques) the student is exposed to and involved in courses that may help to develop a research orientation. Furthermore, such involvement may precipitate (or sustain) actual participation in research activities during the doctoral program.

The 1964 doctoral recipients are differentiated on two patterns for research activity, according to the number of courses taken in college mathematics. They are participation in research projects and the proportion of professional time spent in research. This type of academic course with the type of doctorate earned in education yields significant results for the above two patterns as well as for the pattern of publication of a research study.

Proportionately more of the doctoral recipients who took either three or at least four courses in college mathematics tend to engage in research projects during the first year following the receipt of the doctorate (47 and 48 percent, respectively). About four out of ten of the doctoral recipients who had either no courses, one or two courses engaged in such projects (41, 38, and 39 percent, respectively).

Compared to other doctoral recipients awarded the Ed.D., those who took four courses or more tend slightly more to undertake this pattern. Compared to other doctoral recipients awarded the Ph.D., those who took either no courses or three courses tend slightly more to engage in research projects. Given either two or at least four courses, the differentiation between those awarded the Ph.D. and the Ed.D. is rather small (percent difference of three for each). The largest differentiation between the two types of doctoral recipients exists where no courses had been taken (percent difference of 23). Percent difference is also large between the two types of doctoral recipients who had either one or three courses. Table 6.15 shows the data.

TABLE 6.15.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate according to the type of degree earned and the number of courses taken in college mathematics.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Number of Courses	Ph.D.	(N)	Ed.D.	(N)
None	56%	(162)	33%	(325)
1	46%	(93)	35%	(220)
2	41%	(128)	38%	(240)
3	57%	(53)	42%	(114)
4+	50%	(137)	47%	(246)

The pattern for publishing a research study yields comparable directions of results. For example, compared to other doctoral recipients awarded the Ed.D., those who had taken at least four courses tend slightly more to publish (21 percent); percent difference between them and those awarded the Ph.D. is zero. Compared to other doctoral recipients of the Ph.D., those who took no courses tend slightly more to publish (26 percent); percent difference between them and those awarded the Ed.D. is 12. Percent difference between the two types of doctoral recipients who had either two or three courses is large; directions for each is favorable for those awarded the Ph.D. (for the former, 21 percent _vs._ 12 percent; 23 percent _vs._ 12 percent, for the latter). Differentiation on the pattern is almost negligible for those who had one course (17 percent _vs._ 16 percent).

For the third pattern--proportion of professional time spent in research--data indicate that slightly less of those who took three or at least four courses spend no professional time in research (50 and 51 percent, respectively). For doctoral recipients who took either no courses or one or two courses, a comparable proportion of each group reported no time spent in research (58, 59, and 60 percent respectively). Slightly more of those who had taken three courses represented the medium category for professional time devoted to research (41 percent). Slightly more who had had at least four courses reported a high proportion of professional time in research (12 percent). The group to rank second on this high category are the doctoral recipients who reported three courses (9 percent). Doctoral recipients who had taken no courses, one course, and two courses are, again, quite similar on the high category of the pattern (6, 5, and 5 percent, respectively).

According to the number of courses taken in college mathematics and the type of degree earned, directions of results on the pattern differ somewhat from the two previous patterns. For example, compared to other doctoral recipients awarded the Ph.D., no longer do those who had taken no courses rank first. Doctoral recipients of the Ph.D. who had taken three courses and at least four courses rank first and second on at least some professional time (1-100 percent) spent in research; however, these same doctoral recipients who rank first and second on a high proportion of time spent in research represent the reversed order of the ordinal values of the variable. However, percent differences on the low and the high category of the pattern tend to be slightly smaller between the two types of doctoral recipients who took at least four courses than those who took three courses (-5 percent and 9 percent vs. -12 percent and 11 percent). Differentiation on the high category of the pattern between the two types of doctoral recipients tends to decrease as the ordinal value of the variable goes from two to no courses (7, 4, 1 percent, respectively). Doctoral recipients of the Ed.D. who took at least four courses have the same pattern for professional time spent in research as the doctoral recipients of the Ph.D. who took two courses.

Data tend to support the assumption that doctoral recipients who had sustained involvement in such research courses as college mathematics represent the favorable categories of the pattern for professional time spent in research. Table 6.16 (page 386) presents the data.

The doctoral recipients were given two choices to check where they considered they took courses that taught them the methods they have used in doing research now: mainly in the department of education or outside the department of education. For three patterns of potential commitment to research significant results occur. They are

TABLE 6.16.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research according to the type of degree earned and the number of courses taken in college mathematics.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Number of Courses	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
None	51%	7%	(162)	62%	6%	(318)
1	56%	8%	(89)	60%	4%	(216)
2	53%	9%	(126)	64%	2%	(239)
3	42%	17%	(48)	54%	6%	(112)
4+	48%	18%	(134)	53%	9%	(241)

publication of a research study, participation in research projects, and proportion of professional time spent in research. Significance occurs for these three patterns, according to the type of degree earned and this evaluative statement of the academic program.

The doctoral recipients who checked that the courses were taken outside the department of education tend slightly more to reflect the favorable category of each pattern. In other words, these doctoral recipients tend slightly more: (1) to publish a research study closely related to the topic of the dissertation (24 percent vs. 16 percent); (2) to engage in research projects (50 percent vs. 40 percent); and to spend at least some professional time (1-100 percent) in research (50 percent vs. 42 percent) as well as to record a high proportion of time (50-100 percent) devoted to research (11 percent vs. 6 percent).

Doctoral recipients who were awarded the Ph.D. and the Ed.D. and stated the courses were taken outside the department of education are rather similar on the pattern for publishing a research study (25 and 24 percent, respectively). Percent difference occurs between the two types of doctoral recipients who said that they learned the methods mainly in courses inside the department of education; the direction is more favorable for those awarded the Ph.D. (20 percent *vs.* 14 percent). Thus, data indicate the two types of institutional settings differentiate those awarded the Ed.D. slightly more (10 percent *vs.* 5 percent).

According to each nominal value of the evaluative statement, doctoral recipients awarded the Ph.D. tend slightly more to engage in research projects during the first year following the receipt of the doctorate. Doctoral recipients of the Ed.D. who felt that they learned the methods mainly in courses outside the department are quite similar to those who earned the Ph.D. and stated the courses were in the department of education (45 percent and 47 percent, respectively). Table 6.17 presents the data.

TABLE 6.17.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the *first* year following the receipt of the doctorate according to the type of degree earned and place where respondents learned methods used in doing research.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Learned Mainly in Courses	Ph.D.	(N)	Ed.D.	(N)
In Department of Education	47%	(329)	37%	(766)
Outside Department of Education	56%	(171)	45%	(219)

The directions of results discussed for the previous pattern tend to be similar for the pattern of professional time spent in research. research. In other words, doctoral recipients who earned the Ph.D. and checked the institutional setting of "outside the department" tend slightly less to spend no professional time in research and tend slightly more to record a high proportion of time in the activity (47 and 16 percent, respectively). Similarity on the pattern exists between doctoral recipients of the Ed.D. who represented the category of "courses outside the department" and those who earned the Ph.D. and represented the category of "courses in the department of education." Table 6.18 gives the data for the results of this pattern.

TABLE 6.18.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research according to the type of degree earned and place where respondents learned methods used in doing research.

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference	
Learned Mainly in Courses	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
In Department of Education	53%	8%	(320)	60%	5%	(753)	-7%	3%
Outside Department of Education	47%	16%	(167)	54%	7%	(215)	-7%	9%
Percent Difference	6%	-8%		6%	-2%			

Two general issues concerning the development of professional personnel in educational research result from the analyses of the data for this evaluative statement of the academic program. The first issue

The directions of results discussed for the previous pattern tend to be similar for the pattern of professional time spent in research. research. In other words, doctoral recipients who earned the Ph.D. and checked the institutional setting of "outside the department" tend slightly less to spend no professional time in research and tend slightly more to record a high proportion of time in the activity (47 and 16 percent, respectively). Similarity on the pattern exists between doctoral recipients of the Ed.D. who represented the category of "courses outside the department" and those who earned the Ph.D. and represented the category of "courses in the department of education." Table 6.18 gives the data for the results of this pattern.

TABLE 6.18.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research according to the type of degree earned and place where respondents learned methods used in doing research.

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference	
Learned Mainly in Courses	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
In Department of Education	53%	8%	(320)	60%	5%	(753)	-7%	3%
Outside Department of Education	47%	16%	(167)	54%	7%	(215)	-7%	9%
Percent Difference	6%	-8%		6%	-2%			

Two general issues concerning the development of professional personnel in educational research result from the analyses of the data for this evaluative statement of the academic program. The first issue concerns the implication that graduate students in education may not visualize educational research as an academic pursuit in its own right. The second issue pertains to an assumption that the debate for preparing researchers in education is the concern of the academic community as a whole, not exclusively of graduate institutions of education.

According to the content analysis of the 1963-65 catalogues of graduate institutions of education, only a very few institutions had a department or a program within the institution that had a title with "research" or its equivalent in it. The absence of a department entitled with some research-term certainly does not imply either a lack of interest in or a lack of preparation for research by the graduate institution of education. However, there may be some difficulties evident in conveying to a sufficient number of graduate students in education that educational research is an academic pursuit in its own right. The difficulties may be intensified even more, if preparation for research is not emphasized by the graduate institution of education. If doctoral students who desire research training do matriculate with graduate institutions of education that lack evidence for graduate preparation for research, then these doctoral students may have to undertake a rather extensive academic program outside the graduate institution of education.* Thus, the evaluative statement concerning the institutional setting where courses in research methods were taken may, in fact, imply the low visibility to some recent doctoral recipients for the preparation for research by graduate institutions of education.

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*Recall the discussion presented on this general issue in chapters three and five; namely, the level of agreement by deans of graduate institutions and directors of research organizations on the opinion, "Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education."

If educational research is an academic pursuit in its own rights, it seems that the concern for the development of professional personnel for research lies with the academic community as a whole, not exclusively with either the graduate institution of education or a few departments that have related interests in this type of research. It appears that the major issue should be what resources can be provided within the university to yield the most optimum opportunities for doctoral students (in graduate institutions of education as well as other departments) to obtain experiences in educational research. At the same time, both the graduate institutions of education and the interdisciplinary departments that are presently preparing researchers in education may assist in the process of involving the total academic community by two general methods. First, they can provide clarity on such issues as what types of academic programs and training experiences are necessary for educational researchers. Second, they can provide guidelines for implementing the policies and procedures for preparation for educational research.*

The fourth set of variables relating to the academic patterns concerns the period(s) of time spent at the graduate institution to complete requirements for the degree. One variable operationally defining the time-patterns is the longest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received.

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*One consequence of such guidelines may be a shift of focus on the assessment of courses taken by doctoral students; that is, a shift from the concept of comparing institutional settings where methods in research are learned to the concept of only how effective are the academic programs and opportunities for obtaining research training and experiences.

Six periods of time represent the variable; at no time, 6 months, 9 months, 12 months, 15 months, and 18 months or more. Another version of the variable represents combined periods of time: at no time, 6 and 9 months, 12 and 15 months, and at least 18 months. According to each version, significance occurs for each of the four patterns for potential commitment to research.

Doctoral recipients who represented the combined period of 12 and 15 months tend to publish a research study closely related to the topic of the dissertation slightly more than those who spent either no months or the combined period of 6 and 9 months and slightly less than those who spent at least 18 months of continuous full-time residence (18 percent vs. 13, 14, and 22 percent, respectively).

According to each period of continuous full-time residence, slightly more of those awarded the Ph.D. tend to publish a research study. Percent difference on the pattern tends to be large between the two types of doctoral recipients who represented the two time-periods of 6 and 9 months and of at least 18 months (for the former, 22 percent vs. 12 percent; for the latter, 26 percent vs. 19 percent). Percent differences are rather small between the two types of doctoral recipients with the time-period of no months (15 percent vs. 12 percent) and the time-period of 12 and 15 months (21 percent vs. 17 percent).

The time-pattern differentiates the doctoral recipients on their pattern for participation in research projects during the first year following the receipt of the degree. Slightly over five out of ten who had at least 18 months of continuous full-time residence engaged in research projects. Almost four out of ten who represented the period of 12 and 15 months undertook the pattern. Slightly over one-third of the dictoral recipients who had no months and 6 and 9 months represented this activity (34 and 35 percent, respectively).

Doctoral recipients of the Ph.D. and the Ed.D. who had at least 18 months rank first and second on the pattern (59 percent and 46 percent). The latter type is quite similar to doctoral recipients of the Ph.D. who recorded the period of 6 and 9 months and of 12 and 15 months (45 percent and 44 percent, respectively). Percent difference is rather large between the two types of doctoral recipients who had the time-periods of 6 and 9 months and of at least 18 months (percent differences of 14 and 13, respectively). Percent difference is almost negligible for those who had no continuous full-time residence (35 percent and 34 percent). A six-percent difference exists between the two types of doctoral recipients who had the time-period of 12 and 15 months. Again, data indicate that the percent difference between the two extreme categories of the variable (no months minus at least 18 months) is slightly larger for those awarded the Ph.D. than the Ed.D. (-25 percent _vs_. -11 percent).

Doctoral recipients who had at least 18 months of continuous full-time residence tend slightly less to spend no professional time in research (47 percent) and slightly more to represent the high

Proportionately more of the doctoral recipients who had at least 18 months in continuous full-time residence prefer working with one or more assistants or jointly with an associate. They tend slightly less to prefer working individually or to check no preference for work-patterns. Comparisons between the two types of doctoral recipients with this time-pattern show that those awarded the Ph.D. tend slightly more to prefer working jointly with an associate and tend slightly less to check no preference or to prefer working individually.

Proportionately more of those with a time-pattern of no months prefer working individually. As each time-period increases, slightly less of the doctoral recipients prefer working by themselves.

It appears that at least one disadvantage of having only a few months of continuous full-time residence is the lack of having opportunities to obtain research experiences which expose the student to work-patterns for doing research other than by himself. Tables 6.20a-6.20b (pages 395 and 396, respectively) provide the data.

In summary of the section, patterns for potential commitment to research by the 1964 doctoral recipients in education are examined, according to four sets of variables operationally defining the academic patterns of these individuals. The four sets of variables reflect the following information: organizational characteristics of the graduate institutions from which the doctorate was received; major subject areas and courses taken by the respondents; an evaluative statement about the academic program; and periods of time spent in doing graduate work at the institution.

TABLE 6.20a.--Proportion of 1964 doctoral recipients in education according to the longest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received and the preference for work in doing research.

	Number of Months of Continuous Residence			
Preference for Work	None	6 and 9	12 and 15	18+
With one or more assistants	10%	7%	10%	15%
As a member of a team	13	16	15	14
As a leader of a team	7	8	9	8
Individually	26	23	21	18
Jointly with an associate	21	23	21	28
No preference	23	22	24	18
	100%	99%	100%	101%
	(399)	(311)	(372)	(614)

TABLE 6.20b.--Proportion of 1964 doctoral recipients in education with their preference for work in doing research according to the type of degree earned and the longest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received.

Number of Months of Continuous Residence	Proportion With Preference for Work*													
	Type of Doctorate Earned													
	Ph.D.							Ed.D.						
	1	2	3	4	5	6	(N)	1	2	3	4	5	6	(N)
None	12%	13	6	28	19	22	(106)	8%	13	7	26	22	24	(293)
6 and 9	9%	10	10	24	28	17	(86)	6%	19	8	23	21	24	(225)
12 and 15	11%	18	8	20	20	22	(94)	10%	14	9	21	22	25	(278)
18+	15%	15	8	16	30	16	(272)	15%	13	7	20	26	20	(342)

*Code: Preference for Work in Doing Research

1. With one or more assistants
2. As a member of a team
3. As a leader of a team
4. Individually
5. Jointly with an associate
6. No preference

Eleven organizational variables of the graduate institutions of education are considered. They include, among others: the type of legal control; level of admission to the graduate program; professional experience as a formal entrance requirement for admission to the graduate program; the type of graduate preparation emphasized; the type of program for training in research provided by the graduate institution of education; and the proportion of graduate faculty doing research. According to each of the institutional characteristics, significant results occur for at least one of the patterns for potential commitment for research. Each of these organizational variables and the type of degree earned by the respondents yield significance for at least one of the patterns. Data tend to support the following statements concerning the direction of results.

Doctoral recipients awarded the Ph.D. from publicly and privately controlled universities rank first and second on the pattern for spending at least some professional time (1-100 percent) in research. Percent differences on both the low and the high categories of the pattern is almost negligible between them.

Doctoral recipients from institutions with a closed level of admission to the graduate program tend slightly less to spend no professional time in research and slightly more to represent the high category of the pattern. Those awarded the Ph.D. and the Ed.D. from this type of institution rank first and second on the favorable categories of the pattern. Percent differences on the categories of the pattern tend to be slightly larger between them than between the two types of doctoral recipients from institutions with an open level of admission. In fact, those awarded the Ed.D. from institutions with a closed level of admission are rather similar to the doctoral recipients of the Ph.D. from institutions with an open level of admission.

Compared to the three remaining groups, proportionately more of doctoral recipients of the Ph.D. from institutions that have professional experience as a formal entrance requirement reflect the favorable categories of the pattern for professional time spent in research. However, percent differences on the pattern tend to be slightly larger between the two types of doctoral recipients from this institutional setting than between those awarded the Ph.D. and the Ed.D. from institutions that have no entrance requirement for professional experience.

Doctoral recipients from institutions that emphasize graduate preparation for research tend slightly more to undertake these three patterns for research activity: publication of a research study, participation in research projects, and at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) spent in research. Percent differences on the pattern for professional time spent in research are quite small between those awarded the Ph.D. and the Ed.D. from institutional settings with graduate preparation for research. These two types of doctoral recipients tend to differ slightly less than those from institutions that do not emphasize this type of preparation.

Doctoral recipients from institutions with the research training as a part of the regular degree program and as a special program represent slightly less no professional time devoted to research. However, proportionately more from institutions with the former type of training program spend a high proportion of professional time in research. Doctoral recipients awarded the Ph.D. from institutions with the above mentioned types of training program rank first and second on the favorable directions of the pattern. Doctoral recipients awarded the Ed.D. from these same two types of institutionsl settings tend to be very comparable on the pattern with those awarded the Ph.D. from institutions with no training program.

Given a high proportion of the graduate faculty doing research in the institution from which the doctorate was received, doctoral recipients tend slightly less to record no professional time in research and slightly more to spend a high proportion of time in this activity. Data lend evidence that optimum conditions for research training exist in institutional settings where a high proportion of the graduate faculty are doing research.

The second set of variables for the academic patterns concerns the major subject of the undergraduate degree of the respondent and the number of courses taken in college mathematics.

Doctoral recipients who had an undergraduate major in psychology and in the physical and biological sciences, including mathematics, rank first and second on a high proportion of professional time spent in research. However, doctoral recipients who had an undergraduate major in education rank first on at least some professional time (1-100 percent) devoted to research. Slightly more of those whose undergraduate major was in psychology tend to prefer working with one or more assistants and as a leader of a team. Slightly more of those whose undergraduate major was in education choose working jointly with an associate.

Given three or at least four courses taken in college mathematics, doctoral recipients tend slightly more to engage in research projects and slightly less to record no professional time spent in research. Those who took at least four courses and three courses in this subject rank first and second on the high category of professional time spent in research. Given at least four courses in college mathematics, doctoral recipients awarded the Ed.D. have the same pattern for professional time spent in research as doctoral recipients who earned the Ph.D. and took two courses. Emphasis for interpretating the results is not exclusively on the number of courses taken per se. Relevancy lies with the potential opportunities that students may have in developing a research orientation through sustained involvement in such courses. Such involvement may either elicit or sustain during the doctoral program participation in research projects being conducted in the institution.

Compared to doctoral recipients who stated that they learned the methods that they now use in doing research mainly in courses taught in the department of education, those who felt that such courses were taken outside the department tend slightly more to publish a research study, to engage in research projects, and to spend at least some professional time (1-100 percent) as well as a high proportion (50-100 percent) of time in research. Two issues are discussed. One concerns the implication of the rather low visibility to some students in education for preparation for research by the graduate institution of education. The second issue deals with the assumption that, if educational resesearch is an academic pursuit in its own right, the concern for the development of professional personnel lies with the academic community as a whole--not exclusively with either graduate institutions of education or a few departments that have related interests in this type of research.

The fourth set of variables for the academic patterns concerns the time-patterns during graduate work. One variable operationally defining time-patterns is the longest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received. Significant results occur for all four patterns.

Those individuals who recorded at least 18 months in the graduate institution tend slightly more to publish a research study, to engage in research projects, to spend at least some professional time (1-100 percent) as well as a high proportion (50-100 percent) of professional time in research. Doctoral recipients of the Ph.D. with the time-pattern of at least 18 months rank first on the favorable direction of each pattern. Those awarded the Ed.D. with this time-pattern rank second on the last two patterns and are similar to the doctoral recipients of the Ph.D. with the time-period of 12 and 15 months. Doctoral recipients who had at least 18 months of continuous full-time residence prefer slightly more to work jointly with an associate and with one or more assistants. Those whose time-pattern was no months tend slightly more to prefer working individually. As the number of months of continuous full-time residence increases, slightly less of the doctoral recipients prefer working by themselves.

The next section of the chapter deals with patterns for economic resources during graduate work.

3. Patterns for Potential Commitment to Research According to the Patterns for Economic Resources during the Graduate Work of the 1964 Doctoral Recipient in Education

Four variables operationally define patterns for economic resources during graduate work. They are: before the receipt of the doctorate in education, the number of years spent in teaching or other school experience; the receipt of a research scholarship or assistantship during graduate work; the number of years involved in a full-time job between the first enrollment as a graduate student and the award of the doctorate in education; and the respondent's being in debt for his education at the time of receiving the doctoral degree. (The first two listed variables are discussed in the text of this section.)

According to each variable, significant results occur for at least one of the four patterns for potential commitment to research. Each pattern for economic resources with the type of degree earned, also, yield significant results for at least one of the patterns for research commitment.

Four periods of time represent the number of years spent in teaching or other school experience: none, one to five years, six to 10 years, and eleven years or more. Proportionately more of the doctoral recipients who had many years in this type of activity do not tend to undertake the patterns for potential commitment to research. The results indicate that, only when the number of years in teaching or other school experience becomes increasingly large, do points of diminishing returns occur for the favorable directions of the patterns. In other words, doctoral recipients who spent one to five years in this type of professional experience tend to be more comparable on their patterns to those who had no years than to the doctoral recipients who spent six to ten years or at least eleven years. This pattern for economic resources differentiates doctoral recipients on all four patterns for their research activities during the first year following the receipt of the doctorate.

Compared to any group, slightly more of the doctoral recipients who spent one to five years in teaching or other school experience tend to publish (25 percent). Compared to those who had the time-periods of six to ten years and of at least eleven years, doctoral recipients with the time-pattern of no years tend slightly more to undertake this research activity (21 percent vs. 18 percent and 13 percent, respectively).

Doctoral recipients of the Ph.D. who had a time-period of one to five years in this professional activity rank first on the pattern for publishing a research study and yield a five percent difference with those awarded the Ed.D. (28 percent vs. 23 percent). These doctoral recipients of the Ed.D. tie for second place with those awarded the Ed.D. who had the time-pattern of no years; a three percent difference exists between the two types of doctoral recipients for this latter time-pattern. For the group with a time-period of six to ten years, percent difference is favorable for those awarded the Ph.D. (21 percent vs. 17 percent). The seven percent difference occurring for the group with at least eleven years is favorable in the direction of those awarded the Ph.D. (18 percent vs. 11 percent).

Compared to doctoral recipients who represented the time-patterns of six to ten years and at least eleven years, doctoral recipients with the time-periods of one to five and of no years are rather comparable and tend slightly more to engage in research projects during the first year following the receipt of the doctorate (53 and 56 percent, respectively _vs._ 47 and 33 percent, respectively).

Doctoral recipients of the Ph.D. who spent one to five years and no years in teaching or other school experience are rather comparable and rank first and second on the pattern for participation in research projects (62 percent and 60 percent). Doctoral recipients of the Ed.D. with no years in this professional activity rank third (52 percent). Those who earned the Ed.D. and had one to five years are very comparable to the group that spent between six and ten years in this professional activity (45 percent _vs._ 47 percent and 46 percent for those awarded the Ed.D. and the Ph.D., respectively). For the group whose time-pattern was at least eleven years, differentiation is favorable for those awarded the Ph.D. (39 percent _vs._ 31 percent). Data indicate that noticeable differentiation on the pattern for those awarded the Ph.D. does not occur until respondents recorded between six and ten years spent in teaching or other school years. For those awarded the Ed.D. noticeable differentiation begins to occur with time-pattern of one to five years.

Compared to any group, doctoral recipients who had spent between one and five years in this professional activity tend slightly less to record no professional time spent in research (48 percent). Compared to those who had the time-patterns of no years and at least eleven years, doctoral recipients with the time-period of six to ten years tend slightly less to spend no professional time in research (53 percent *vs.* 58 and 64 percent, respectively). Doctoral recipients whose time-patterns were no years and one to five years rank first and second on the high category for professional time spent in research; percent differences are large between them and the doctoral recipients with the time-patterns of six to ten years and of at eleven years (19 percent and 14 percent *vs.* 6 percent and 4 percent, respectively). Data indicate that the time-pattern of no years represents slightly more the two extreme categories of this pattern for potential commitment to research. Table 6.21 gives the data.

TABLE 6.21.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research according to teaching or other school experience before the receipt of the doctorate.*

	Prior Experience: Number of Years			
Proportion of Time Spent in Research	None	1-5	6-10	11+
Low (0%)	58%	46%	53%	64%
Medium (1-49%)	23	39	42	32
High (50-100%)	19	14	6	4
	100%	99%	101%	100%
	(57)	(402)	(463)	(766)

*According to the number of years spent in teaching or other school experience prior to the receipt of the degree and the type of degree earned, the Chi-Square Test is not performed because of too few cases in one category. The following results are noted. Doctoral recipients of the Ph.D. who had no years and between one and five years rank first on the high category of the pattern (27 percent and 18 percent). The latter group ranks first on at least some professional time (1-100 percent) spent in research (61 percent). For at least some professional time spent in research, doctoral recipients of the Ph.D. who had six

Doctoral recipients are differentiated on their preference for work in doing research now, according to the number of years spent in teaching or other school experience prior to the receipt of the doctorate. Doctoral recipients with the time-periods of no years and one to five years tend slightly more to prefer working with one or more assistants. Those with the former time-period tend slightly more to check no preference and tend slightly less to prefer working jointly with an associate. Those with the latter time-period tend slightly less to check no preference and tie with doctoral recipients with the time-period of six to ten years in tending slightly more to prefer working jointly with an associate. Doctoral recipients with the time-period of at least eleven years tend slightly less to prefer working with one or or more assistants and as a leader of a team; they tend slightly more to prefer working as a member of a team and individually. Data are presented in Table 6.22 (page 407).

Certain issues are raised as the result of the analyses of the data for this type of economic resources. First, data indicate that having teaching or other school experience may not necessarily preclude the development of patterns for potential commitment to research.

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to ten years and no years are comparable to those who earned the Ed.D. and spent one to five and six to ten years in teaching or other school experience (49, 50, 53, and 54 percent, respectively). For this same category of the pattern (1-100 percent), doctoral recipients of the Ed.D. with no years are comparable to the group with at least eleven years (67, 66, and 63 percent). Doctoral recipients of the Ed.D. with no years and one to five years tie for third place on the high category of the pattern (11 percent). Range on the high category for the remaining four groups is between 3 and 8 percent, with the doctoral recipients of the Ph.D. representing the two extreme percents.

TABLE 6.22.--Proportion of 1964 doctoral recipients in education with preference for work in doing research according to teaching or other school experience before the receipt of the doctorate.

Preference for Work	Prior Experience: Number of Years			
	None	1-5	6-10	11+
With one or more assistants	14%	16%	11%	9%
As a member of a team	11	11	12	17
As a leader of a team	11	9	8	6
Individually	18	19	20	24
Jointly with an associate	20	26	26	22
No preference	27	19	22	21
	101%	100%	99%	99%
	(56)	(398)	(463)	(774)

*According to this pattern for economic resources and the type of degree earned, the Chi-Square Test is not performed because of too few cases in six categories.

A second issue concerns recruitment procedures for potential trainees in educational research.

According to the number of years spent in teaching or other school experience prior to the receipt of the doctorate, results indicate that, only when the number of years becomes increasingly large, do points of diminishing returns occur for doctoral recipients to undertake research activities during the first year following the receipt of the degree. It appears that individuals who have had only a few years in this professional activity should not necessarily be excluded as potential trainees in educational research. Early identification of these individuals as having--or even being redirected to have--

potentialities or interests for research activity provides another source for recruiting trainees in educational research. Of course, recruiting individuals who had no years in this professional activity is relevant because they have had no or relatively little reinforcement for a career decision in teaching or other school experience.

Concurrent with such recruiting procedures is the provision for financial assistance from research scholarships or assistantships. Rationale is two-fold. First, if many individuals begin doctoral work in education relatively late in life because of the lack of sufficient funds to finance their education, it seems rather natural that many may even record quite a few years in teaching or other school experience. And this situation may occur, even if professional experience is not required for admission to the graduate program. Second, if funds were unavailable to pursue graduate work earlier and if funds are relatively insufficient even during the doctoral program, then it may be assumed that these individuals may continue to spend time in teaching or other school experience. Thus, reinforcement for a career decision for an activity other than research seems rather natural.

The first underlying assumption is that graduate institutions of education may initiate--or reshift in some instances--an emphasis for career decisions in research by doctoral students in education, if students who are still in their undergraduate program or individuals who have spent only a few years in teaching or other school experience are recruited rather early as potential trainees in educational research. The second underlying assumption is that graduate institutions of education may sustain an emphasis for career decisions in research by doctoral students in education, if research scholarships or assistantships are provided during the doctoral program for obtaining research experiences.

The second assumption of the previous paragraph may be supported by examining another pattern for economic resources during graduate work: the receipt of a research scholarship or assistantship.

The variable has three categories: at least one semester of a research scholarship or assistantship x no research scholarship or fellowship, but a teaching assistantship or a fellowship (scholarship) requiring no service from the individual x no type of scholarship (or fellowship) or assistantship. According to this pattern for economic resources, significant results occur for all four patterns for research activity during the first year following the receipt of the doctorate. Significance also occurs for each pattern, according to the receipt of a research scholarship or assistantship and the type of degree earned. Given a receipt of a research scholarship or assistantship, slightly more of the doctoral recipients tend to represent the favorable directions of each pattern.

Doctoral recipients who had a fellowship and an assistantship other than research tend to publish a research study slightly more than those who had no type of scholarship and slightly less than those who had a research scholarship or assistantship (18 percent vs. 14 percent and 23 percent, respectively). Doctoral recipients of the Ph.D. who had a research scholarship or assistantship rank first on the pattern (28 percent). Those awarded the Ed.D. with this same type of research remuneration are quite similar to the doctoral recipients of the Ph.D. who had remuneration from another source and who had no type of scholarship (20 percent, 21 percent, and 19 percent, respectively). For each of the latter two groups, percent difference between the two types of doctoral recipients is five percent and seven percent, respectively.

Doctoral recipients who had a type of remuneration from a source other than one designated "research" tend to participate in research projects slightly more than those who had no scholarship or assistantship and slightly less than those who had a research scholarship or assistantship (42 percent vs. 34 percent and 54 percent, respectively). Doctoral recipients of the Ph.D. who had this research type of remuneration rank first on the pattern (63 percent). Second place represents a tie between the doctoral recipients of the Ed.D. who had a research scholarship or assistantship and those who earned the Ph.D. and had another type of assistantship or fellowship (48 percent). The doctoral recipients of the Ed.D. who had another type of remuneration, in turn, become comparable to the doctoral recipients of the Ph.D. who had no type of scholarship (38 percent). The latter group has a six percent difference between the two types of doctoral recipients. Data, again, indicate that differentiation between the two extreme nominal values of this economic pattern is slightly larger for those awarded the Ph.D. rather than the Ed.D. (25 percent vs. 16 percent).

Directions of results for the pattern of the proportion of professional time spent in research are similar to the previous pattern of potential commitment to research. Doctoral recipients who received a research scholarship or assistantship tend slightly less to record no professional time spent in research (45 percent) and tend slightly more to spend a high proportion of professional time in research (14 percent). Although doctoral recipients awarded either a teaching assistantship or a fellowship requiring no service tend slightly less than those who received no type of scholarship or assistantship to spend no professional time in research (55 percent _vs._ 67 percent), these two groups are rather similar on the high category of the pattern (5 percent _vs._ 4 percent).

According to each nominal value of the economic pattern, slightly more of those awarded the Ph.D. tend to spend at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) in research. However, according to each of the two nominal values of the variable not representing the receipt of a research scholarship or assistantship, differentiation between those awarded the Ph.D. and the Ed.D. is really quite small for both the low and the high categories of the pattern. Thus, given the receipt of remuneration from either type of research source, doctoral recipients awarded the Ph.D. and the Ed.D. rank first and second on the favorable directions of the pattern as well as yield between them the largest percent difference for both the low and the high categories of the pattern. Similar to the previous pattern, data indicate that the two extreme categories of this type of economic resources (yes minus no) yield a percent difference for both the low and the high categories of professional time spent in research that is slightly larger for those awarded the Ph.D. rather than the Ed.D. Table 6.23 presents the data.

TABLE 6.23.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research according to the type of degree earned and the receipt of a research scholarship or fellowship during graduate work.

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference	
Receipt of a Research Scholarship or Assistantship	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
(1) Yes	38%	22%	(170)	49%	9%	(274)	-11%	-13%
(2) No, but Another Type*	52%	6%	(235)	57%	5%	(379)	-5%	1%
(3) No	65%	6%	(158)	67%	4%	(477)	-2%	2%
Percent Difference: (1)-(3)	-27%	16%		-18%	5%			

*Either a teaching assistantship or a fellowship (scholarship) requiring no service.

Data indicate that proportionately more of doctoral recipients who received a research scholarship or assistantship and earned the Ph.D. represent the favorable categories of each of the three patterns for research activity. However, another emphasis for interpretating the data lies in the general fact that patterns for potential commitment to research are relatively more insured for both types of doctoral recipients who did receive a research scholarship or assistantship.

Differentiation occurs for the fourth pattern of potential commitment to research--preference for work in doing research.

Slightly more of the doctoral recipients who received a research scholarship or assistantship tend to prefer working as a leader of a team, with one or more assistants, and jointly with an associate. For the latter two work-patterns, doctoral recipients with a teaching assistantship and a fellowship requiring no service from them are quite similar. Both of these groups tend slightly less to check no preference and to prefer working individually. Thus, doctoral recipients who had no type of scholarship or assistantship tend slightly less to prefer working with one or more assistantships, jointly with an associate, and as leader of a team; they tend slightly more to check no preference and to prefer working individually and as a member of a team. For the latter pattern, doctoral recipients with remuneration from a source other than one designated "research" are comparable.

According to the type of degree earned and the type of scholarship or assistantship received during graduate work, significance also occurs for this fourth pattern. Differentiation for any of the preferences tends to be slightly less between the two types of doctoral recipients who received no type of scholarship or assistantship. For the group representing receipt of a teaching assistantship and a fellowship requiring no service, slightly more of the doctoral recipients of the Ph.D. tend to prefer working as a member of a team, as a leader of a team, and jointly with an associate; slightly more of those awarded the Ed.D. tend to check no preference. They are comparable on the remaining two preferences. For the group representing receipt of a research scholarship or assistantship, slightly more of those awarded the Ph.D. tend to prefer working with one or more assistants and jointly with an associate; slightly more of those awarded the Ed.D. tend to prefer working as a member of a team and as a leader of the team. They are comparable on the remaining two preferences. Tables 6.24a-6.24b give the data. (Table 6.24b is on page 415.)

TABLE 6.24a.--Proportion of 1964 doctoral recipients in education with preference for work in doing research according to the receipt of a research scholarship or assistantship during graduate work.

	Receipt of a Research Scholarship or Assistantship		
Preference for Work	Yes	No, but Another Type*	No
With one or more assistants	12%	14%	8%
As a member of a team	13	15	15
As a leader of a team	9	7	7
Individually	19	18	27
Jointly with an associate	26	27	19
No preference	21	20	24
	100%	101%	100%
	(441)	(614)	(641)

The results lend support for the assumption entertained at the onset. Doctoral recipients who did receive a research scholarship or assistantship during their graduate work do tend slightly more to undertake the patterns for research activity during the first year following the receipt of the doctorate.

In summary of this section, two variables operationally defining economic patterns during graduate work are presented. They are: before the receipt of the doctoral degree, the number of years spent in teaching or other school experience; and the receipt of a research scholarship or assistantship. According to each pattern for economic

TABLE 6.24b.--Proportion of 1964 doctoral recipients in education with preference for work in doing research according to the type of degree earned and the receipt of a research scholarship or assistantship during graduate work.

Receipt of a Research Scholarship or Assistantship	Proportion With Preference for Work**													
	Type of Doctorate Earned													
	Ph.D.							Ed.D.						
	1	2	3	4	5	6	(N)	1	2	3	4	5	6	(N)
Yes	14%	10	8	18	29	21	(165)	11%	14	10	19	24	21	(276)
No, but Another Type*	14%	17	9	17	29	13	(233)	13%	13	6	18	26	24	(381)
No	9%	15	6	28	18	24	(160)	8%	15	8	27	20	24	(481)

*Either a teaching assistantship or a fellowship (scholarship) requiring no service.

**Code: Preference for Work

1. With one or more assistants
2. As a member of a team
3. As a leader of a team
4. Individually
5. Jointly with an associate
6. No preference

resources, significant results occur for the four patterns for research activity during the first year following the receipt of the doctorate. Data tend to support the following statements.

Contrasted to doctoral recipients who had between six and ten years or at least eleven years in teaching or other school experience, those who had either no years or one to five years tend slightly more to represent the favorable directions of all four patterns for potential commitment to research. The results indicate that, only as the number of years in this type of professional experience becomes increasingly large, do points of diminishing returns occur for becoming involved in research activities during the first year following the receipt of the doctorate.

Given the receipt of a research scholarship or assistantship during graduate work, doctoral recipients tend slightly more to publish a research study closely related to the topic of the dissertation, to engage in research projects, and to spend at least some professional time (1-100 percent) as well as a high proportion of professional time (50-100%) in research. They, also, tend slightly more to prefer working as a leader of a team, jointly with an associate, and with one or more assistants. Doctoral recipients who had either a teaching assistantship or a fellowship requiring no service tend to be slightly more comparable to this group rather than to those who had no scholarship or assistantship. The latter group tends slightly more to represent the unfavorable directions of the pattern for potential commitment to research. Given the receipt of a research scholarship or assistantship, doctoral recipients awarded the Ph.D. and Ed.D. rank first and second on the favorable categories of the patterns. Although differentiation between them tends to be slightly larger than for the remaining two groups representing the nominal values of the variable, emphasis for interpreting data is still on the relative importance of providing research scholarships or assistantships during graduate work--no matter what degree in education is earned.

The final section for presentation of results concerns certain values and processes of decision making for activity in research.

4. Patterns for Potential Commitment to Research According to Certain Values and Processes of Decision Making for Activity in Research Prior to the Receipt of the Doctorate in Education

Three variables operationally define certain values for activity in research held by doctoral recipients. They are: the time-period in which the respondent first decided to study for the doctorate (pre- or post-college graduation); the original objective upon first entering graduate school; and a rationale for selecting the graduate school from which the doctorate was received (research opportunities attractive). The latter two variables are discussed in the text of this section. Five variables operationally define processes of decision making for activity in research prior to the receipt of the doctorate.*

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*Data are not available to examine the actual processes of decision making for the types of research experiences the respondents did or did not have prior to the receipt of the doctorate. This area of inquiry still needs systematic investigation. Emphasis on interpreting the data is more an end-result of the decision-making processes--that is, the individuals did or did not have certain research experiences.

They are: publication of any research reports; work in a research organization; evaluation of the work in the research organization (most valuable part of research training during graduate study); participation in research projects in a department outside the school of education; and the range of opportunities to obtain research experiences. The latter two variables are presented in the text of this section.

According to each of the eight variables listed above, significant results occur for at least one of the patterns for research activity during the first year following the receipt of the doctorate. According to the type of degree earned and each of the variables operationally defining this final set of individual characteristics, significance occurs for at least one of the four patterns for potential commitment to research.

The respondent was given a choice of three categories noting the original objective when he first entered graduate school: no more than a master's degree; a doctorate in education; and a doctoral degree in another department but a change later to a doctorate in education. There are four assumptions entertained about the directions of results for patterns on which significance occurs. First, it is assumed that doctoral recipients who had the original objective of no more than a master's degree tend slightly less than the remaining two groups to reflect the favorable directions of the patterns. Second, doctoral recipients who represented a change to the field of education tend slightly more than the other two groups to pursue the patterns for research commitment. Third, according to each type of original objective, doctoral recipients who were awarded the Ph.D. tend slightly more to undertake the patterns than those who earned the Ed.D. However, comparability on the patterns exist slightly more between the two types of doctoral recipients in education who originally undertook a doctoral degree in another field but changed to the field of education. Thus, the fourth assumption is that on each pattern for research activity percent difference between the two institutional settings in which the doctoral program was first begun is smaller for those awarded the Ph.D. rather than the Ed.D.

Rationale for the above assumptions is two-fold.* First, according to the two distinct types of original objectives at the onset of graduate work, differentiation exists on the perception of the academic field, the perception of time needed to complete the academic program, and the implied professional goals of the respondents. Second, according to the original objective of undertaking a doctoral degree, differentiation exists on the types of influences for research activity received by the individuals in the institutional setting where study for the doctoral degree was first begun.

According to the two distinct types of degrees pursued at the onset of admission to graduate school, there are three implications for why those who had the original objective of no more than a master's degree may tend slightly less to pursue patterns for potential commitment to research. First, the relatively low aspiration for extensive graduate study at the onset of admission to graduate school implies that the "research needs and requirements" of the academic field undertaken by the individual are not necessarily foremost in his perception of either the academic field or his own professional goal. Second, it is assumed that the professional goal at the onset of graduate work was not necessarily a position in either an academic or another organizational setting where the doctoral degree may be expected. In other words, this type of individual perceived the obtaining of a master's degree as meeting the necessary requirements for his occupational preference. Third, obtaining only a master's degree implies a relatively short time-period to complete the requirements for the degree. Even though this type of individual does later pursue a doctoral program, the conditions surrounding his original objective for graduate work may affect later perceptions of the research opportunities and needs of the field. Two such conditions are entertained. Given the relatively few academic hours (and, in some cases, a relatively short time-period) needed to complete the requirements, the individual may perceive the field more as requiring course work rather than obtaining actual experiences in research through apprenticeships on projects. A second condition concerns the lack of opportunity for the graduate institution to identify rather early in graduate work potential trainees in research. Only for a relatively short time-period (in most cases, one academic year or the intermittently short time-periods represented by summer school sessions) is the graduate student in the institutional setting. Thus, there occurs relatively early in graduate work a lack of sustained involvement in courses of research methodology and in research training.

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*Data are not available to examine the original perceptions of graduate work or the original professional goals or any changes that may have occurred on the part of the respondents. Thus, statements herein are still assumptions.

According to the original objective of a doctoral degree (no matter in what field the individuals first began graduate study), these individuals differ from the previous group on the three accounts discussed in the previous paragraph. First, the relatively high aspiration for extensive graduate study at the onset of admission to graduate school implies that the "research needs and requirements" of the academic field may rank rather high in his perception of the academic discipline and his professional goal. Second, it is assumed that the professional goal at the onset of graduate work was a position in either an academic or another organizational setting where the doctoral degree may be expected. In other words, this type of individual perceived that only through obtaining a doctoral degree would the requirements for his professional goal be met. Third, working for a doctoral degree implies a longer period of time needed to fulfill the requirements of the academic program. Thus, the conditions surrounding the educational patterns for this type of individual tend to be more favorable for yielding patterns for potential commitment to research. One such condition, of course, is that the individual at the onset of graduate work perceives the academic field as requiring some courses in research methods as well as providing at least some experiences in research. Given an anticipated longer period of time in the institutional setting, graduate departments have an opportunity rather early in the graduate program to identify potential trainees in research. Thus, there occurs relatively early in graduate work at least some exposure to and, perhaps, sustained involvement in research training and courses of research methodologies.

The two institutional settings in which the individuals who had the original objective of undertaking a doctoral program (in the field of education versus in another field outside the department of education) tend to be differentiated because of two general perceptions: the perception of the primary emphasis of graduate preparation and the perception of the reward system(s) for professors within each institutional setting. First, as has been discussed previously, graduate preparation for research is not emphasized primarily by graduate institutions of education (chapter three). The connotation for the type of graduate preparation emphasized in most departments outside the school of education is one for research. Second, perhaps, until relatively recently, the connotation of the reward system(s) for salary increments (or tenure) for professors in graduate institutions of education may not have been one that reflected either predominantly or rather exclusively the research activity or publications by the professors. However, the general connotation of the reward system(s) for professors in most departments outside the school of education is one which emphasizes rather strongly the research activity and publications of the professors. Because the environmental conditions tend to reflect the emphasis on research, it is assumed that doctoral recipients who initiated their doctoral work in a field other than in education entered the field of education more with an orientation for research activity. It is further assumed that they rather early in graduate work may have received reinforcement for career decisions in which their professional activities should reflect potential commitment to research.

No matter what type of doctorate is earned in education, it is assumed that doctoral recipients who entered the doctoral program in education from a doctoral program in another field tend to be rather comparable on their patterns for potential commitment to research. Furthermore, this group, compared to doctoral recipients who had the original objective of a doctorate in education, tends to be more similar on their patterns to those individuals who earned the Ph.D. in education rather than the Ed.D. In other words, according to the two institutional settings in which the doctoral program was begun upon first entering graduate school and to the type of degree earned, there tends to exist a larger range of differences on each pattern between the doctoral recipients who were awarded the Ed.D. rather than the Ph.D. in education.

The major rationale for the above direction of results is based on the assumed effects of the type(s) of cues for doing research that were received in each institutional setting in which the doctoral program was first begun. It is assumed that the individuals who began their doctoral program in another field before changing to one in education matriculated with departments that administered, generally, only one type of doctoral degree. As contrasted to the graduate institutions of education that may administer at least one type of doctorate in education, the debate on such terms as "research-scholar" and "practitioner-professional" may have been relatively absent at the onset of their doctoral program in another field. Thus, it is assumed that from this institutional setting the original cues received for doing research were ones which implied "everyone upon the completion of the doctoral program should undertake positions in which some professional activity would be devoted to research activity."

Even if the graduate institution of education administers only one type of doctorate in education, the debate on the differences (real or unreal) seems to be rather evident. (Recall the discussion of this attitudinal item presented in chapters three and five.) If administrative officials and professors in graduate institutions of education entertain the debate on the differences between the two types of doctorate in education, it is assumed that the debate affects slightly more those who first began their doctoral program in the department of education rather than in another department. Furthermore, it is assumed that the debate on which type of doctorate "should represent more the research degree" affects slightly more negatively the perception of cues for doing research received by those whose original objective upon first entering graduate school was the Ed.D. Thus, according to the two types of institutional settings in which doctoral work was first begun and the type of degree earned, it is assumed that those who upon first entering graduate school desired an Ed.D. and were awarded that degree tend slightly less than the three remaining groups to reflect the favorable categories of the patterns for research activity during the first year following the receipt of the doctorate.

Attention is now turned to the analyses of the results. According to original objective upon first entering graduate school, significance occurs for three patterns. They are the publication of a research study, participation in research projects, and proportion of time spent in research. In the main, the directions of results entertained in the previous paragraphs do occur.*

Doctoral recipients who upon first entering graduate school desired a doctorate in education tend to publish a research study slightly more than those who had the objective of no more than a master's degree and slightly less than those who represented the change to the doctoral program in education from one in another department (20 percent vs. 16 percent and 23 percent, respectively). Tables 6.25a-6.25b provide data for this pattern. (Table 6.25b is on page 426.)

TABLE 6.25a.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation according to the original objective of the respondent when he first entered graduate school.

	Original Objective		
Published a Research Study	No More than a Master's	Doctorate in Education	Doctorate...but Changed to Education
Yes	16%	20%	23%
No	84	80	77
	100%	100%	100%
	(1151)	(410)	(138)

As shown in Table 6.26b, given the original objective of a doctoral degree in another department, those awarded the Ed.D., not the Ph.D., tend slightly more to publish a research study (28 percent vs.

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*However, future research is still required to provide systematic evidence for the rationale offered for the direction of the results.

TABLE 6.25b.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation according to the type of degree earned and the original objective of the respondent when he first entered graduate school.

	Proportion Who Did Publish a Research Study			
	Type of Doctorate Earned			
Original Objective	Ph.D.	(N)	Ed.D.	(N)
No More than a Master's	21%	(373)	13%	(778)
Doctorate in Education	25%	(127)	17%	(283)
Doctorate...but Changed to Education	18%	(63)	28%	(75)

18 percent). Doctoral recipients of the Ph.D. who originally pursued at the onset of graduate school a doctorate in education rank second on the pattern and yield an eight percent-difference with those awarded the Ed.D. (25 percent vs. 17 percent). Doctoral recipients of the Ph.D. who had the original objective of no more than a master's degree rank third and provide an eight percent-difference with those awarded the Ed.D. (21 percent vs. 13 percent). The direction of results for this pattern does differ slightly from the anticipated direction; that is, doctoral recipients of the Ph.D. who had the original objective of a doctoral degree in another department tend slightly less to undertake this pattern of research activity. One possible explanation is that these doctoral recipients do not necessarily perceive publishing a study closely related to the topic of the dissertation as the *modus operandi* in research during the first year following the receipt of the doctorate. (This direction of results, however, does not occur for the remaining two patterns.)

Doctoral recipients who had the original objective of a doctorate in education tend to engage in research projects during the first year following the receipt of the degree slightly more than those whose original objective had been no more than a master's degree and slightly less than those who represented a change to the doctoral program in education from one in another department (47 percent vs. 38 percent and 56 percent, respectively). Tables 6.26a-6.26b (page 428) give the data.

As shown in Table 6.26b, differentiation between the two types of doctoral recipients tends to be slightly larger for those who first entered graduate school with the objective of a doctorate in education--and percent difference is favorable in the direction of those awarded the Ph.D. (60 percent vs. 42 percent). Percent difference between the two institutional settings in which the doctoral program was first begun (inside education minus in another department) tends to be slightly larger for those awarded the Ed.D. rather than the Ph.D. (-9 percent vs. -1 percent). Doctoral recipients who earned the Ed.D. and had the original objective of a doctorate in education tend to be rather similar to those who were awarded the Ph.D. and had the original objective of no more than a master's degree (42 percent vs. 44 percent).

The direction of results discussed for the previous pattern occurs for the pattern for proportion of professional time spent in research. Doctoral recipients who upon first entering graduate school desired a doctorate in education tend to spend no professional time in research slightly less than those who originally intended no more than a master's degree and slightly more than those who changed from a doctoral degree in another department to one in education (53 percent vs.

TABLE 6.26a.--Proportion of 1966 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate according to the original objective of the respondent when he first entered graduate school.

	Original Objective		
Engaged in Research Projects	No More than a Master's	Doctorate in Education	Doctorate... but Changed to Education
Yes	38%	47%	56%
No	62	53	44
	100%	100%	100%
	(1147)	(411)	(138)

TABLE 6.26b.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate according to the type of degree earned and the original objective of the respondent when he first entered graduate school.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Original Objective	Ph.D.	(N)	Ed.D.	(N)
No More than a Master's	44%	(374)	35%	(773)
Doctorate in Education	60%	(127)	42%	(284)
Doctorate...but Changed to Education	61%	(62)	51%	(76)

59 percent and 47 percent, respectively). Compared to the two remaining groups, doctoral recipients who represented a change to the doctoral program in education from one in another department tend slightly more to spend a high proportion of professional time in research (13 percent *vs.* 7 percent and 6 percent). Data are given in Tables 6.27a-6.27b. (page 430).

As shown in Table 6.27b, differentiation between the two types of doctoral recipients who changed from a doctoral program in another department to one in education is really quite small for both the low (0 percent) and the high (50-100 percent) category of the pattern. Doctoral recipients of the Ph.D. whose original objective had been a doctorate in education rank first on the pattern of at least some professional time (1-100 percent) spent in research; they and the former group are quite similar on the high category of the pattern. Doctoral recipients of the Ed.D. whose original objective had been a doctorate in education are similar on the low category of the pattern to those who earned the Ph.D. and had the original objective of no more than a master's degree; however, on the high category of the pattern, they are similar to those who earned the Ed.D. and had originally intended no more than a master's degree.

Again, according to the two types of institutional settings where the doctoral program was begun upon first entering graduate school, data indicate that differentiation on patterns for potential commitment to research is slightly larger between the two types of doctoral recipients who had the original objective of a doctorate in education than between the two types who changed to a doctoral program in education from one in another department.

TABLE 6.27a.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research, according to the original objective of the respondent when he first entered graduate school.

	Original Objective		
Proportion of Time Spent in Research	No more than a Master's	Doctorate in Education	Doctorate... but Changed to Education
Low (0%)	59%	53%	47%
Mecium (1-49%)	34	40	40
High (50-100%)	6	7	13
	99%	100%	100%
	(1126)	(397)	(139)

TABLE 6.27b.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research according to the type of degree earned and the original objective of the respondent when he first entered graduate school.

	Type of Doctorate Earned						Percent Difference	
	Ph.D.			Ed.D.				
Original Objective	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
(1) No More than a Master's	56%	9%	(366)	61%	5%	(760)	-5	4%
(2) Doctorate in Education	41%	13%	(121)	58%	5%	(276)	-17%	8%
(3) Doctorate... but Changed to Education	48%	14%	(62)	45%	12%	(77)	3%	2%
Percent Difference (2)-(3)	-7%	-1%		13%	-7%			

The results based on this characteristic of the original objective upon first entering graduate school raise some questions. For example, do the two types of doctoral recipients who represented a change from a doctoral program in another department to one in education differ slightly less because of the initial influences of a research environment in the department in which the doctoral program was first begun? Should the issues for the development of professional personnel in educational research focus less on the differentiation of the two types of doctorate administered in education and focus more on the development of different models for training in research? If the professional goal of a doctoral student is a career in research, should differentiation occur not with the type of doctorate to be earned but with the type of speciality in research to be pursued? If the professional goal is a position in the academic community, should not differentiation between the two types of doctoral recipients occur only with the type(s) of research experiences needed to meet the specified requirements for becoming "future producers of research in the particular field or area of speciality represented"? It may follow that future studies on patterns for potential commitment to research by recent doctoral recipients may rest not so much on the type of doctorate earned in education as on the types of models that yield the optimum conditions for preparation for research.

According to the rationale for selecting the graduate school from which the doctorate was received, doctoral recipients are differentiated on three patterns for research activity during the first year following the receipt of the degree. They are the publication of a research study, participation in research projects, and the proportion of professional time spent in research.

Relatively few of the 1964 doctoral recipients considered of highest importance in their selection of the school the research opportunities provided by that institution. Perhaps this fact in itself indicates that relatively few may consider educational research to be an academic pursuit in its own right.

The 1964 doctoral recipients who considered this rationale to be of highest importance in their selection of the graduate school tend slightly more to represent the favorable directions of each of three patterns for research activity.

Whereby about two out of ten who considered the rationale either moderately important (17 percent) or of no importance (16 percent) published a research study, almost three out of ten (29 percent) who said the reason was of highest importance in their selection of the school undertook this activity.

Differentiation between the two types of doctoral recipients who thought the reason was of highest importance is almost negligible--a two percent difference with direction favorable for those awarded the Ed.D. (30 percent vs. 28 percent). According to each succeeding nominal value for the rationale, percent difference between the two types of doctoral recipients increases and the favorable direction in each case is for those awarded the Ph.D. Thus, data indicate that differentiation between the two extreme categories of the rationale (highest importance minus no importance) tends to be slightly larger for those awarded the Ed.D. rather than the Ph.D. (17 percent vs. 6 percent). Data are given in Tables 6.28a-6.28b.

TABLE 6.28a.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation according to a rationale for selecting the graduate school from which the doctorate was received: research opportunities attractive.

	Level of Importance		
Published a Research Study	Of Highest Importance	Moderately Important	Of No Importance
Yes	29%	17%	16%
No	71	83	84
	100%	100%	100%
	(183)	(464)	(876)

TABLE 6.28b.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation according to the type of degree earned and a rationale for selecting the graduate school from which the doctorate was received: research opportunities attractive.

	Proportion Who Did Publish a Research Study			
	Type of Doctorate Earned			
Level of Importance	Ph.D.	(N)	Ed.D.	(N)
Of Highest Importance	28%	(72)	30%	(111)
Moderately Important	21%	(169)	15%	(295)
Of No Importance	22%	(272)	13%	(604)

Those who stated the rationale was moderately important in selecting the graduate school tend to engage in research projects during the first year following the receipt of the doctorate slightly more than those who felt the rationale was of no importance in their choice and slightly less than those who checked the rationale as being of highest importance (47 percent vs. 37 percent and 59 percent, respectively).

Given the rationale to be of highest importance, the 13 percent difference on the pattern is favorable in the direction of those awarded the Ph.D. (67 percent vs. 54 percent). In fact, the doctoral recipients of the Ed.D. of this group are quite similar to those who earned the Ph.D. and considered the reason moderately important for selection of the graduate school (51 percent). The doctoral recipients of the Ed.D. of this latter group are, in turn, quite similar to those who were awarded the Ph.D. and said the reason was of no importance (44 percent and 46 percent, respectively). The smallest proportion of cases on the pattern for engaging in research projects is represented by doctoral recipients of the Ed.D. who stated the rationale was of no importance (32 percent). On this pattern of engaging in research projects, percent difference between the two extreme nominal values of the rationale is quite comparable for those awarded the Ph.D. and the Ed.D. (21 percent and 22 percent, respectively). Data are given in Tables 6.29a-6.29b (page 435).

Doctoral recipients who stated the rationale was moderately important in their selection of the graduate school tend to spend no professional time in research slightly less than those who felt the

TABLE 6.29a.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate according to a rationale for selecting the graduate school from which the doctorate was received: research opportunities attractive.

	Level of Importance		
Engaged in Research Projects	Of Highest Importance	Moderately Important	Of No Importance
Yes	59%	47%	37%
No	41	53	63
	100%	100%	100%
	(184)	(465)	(875)

TABLE 6.29b.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate according to a rationale for selecting the graduate school from which the doctorate was received: research opportunities attractive.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Level of Importance	Ph.D.	(N)	Ed.D.	(N)
Of Highest Importance	67%	(72)	54%	(112)
Moderately Important	51%	(169)	44%	(296)
Of No Importance	46%	(272)	32%	(603)

rationale was of no importance and slightly more than those who considered the rationale was of highest importance (48 percent vs. 65 percent and 35 percent, respectively). The same direction exists for spending a high proportion of professional time in research (9 percent vs. 5 percent and 16 percent, respectively). Tables 6.30a-6.30b (page 437) provide the data.

As shown in Table 6.30b, compared to the remaining five groups, doctoral recipients of the Ph.D. who considered the rationale was of highest importance tend to represent slightly less the low category of the pattern and slightly more the high category of professional time spent in research (26 percent and 18 percent, respectively). Doctoral recipients of the Ed.D. who represented this high level of importance for the rationale are quite similar on both the low and the high category of the pattern to the doctoral recipients of the Ph.D. who represented the nominal value of the rationale, "moderately important" (for the low category, 40 percent and 42 percent, respectively; for the high category, 14 percent and 13 percent, respectively). For the low category of the pattern, percent difference between the two extreme nominal values of the rationale tends to be slightly larger for those awarded the Ph.D. rather than the Ed.D. (-35 percent vs. -27 percent). However, for the high category, percent difference is comparable for the two types of groups (9 percent and 10 percent).

Two issues are raised from the analyses based on this reason for selecting a graduate school. First, relatively few consider that the research opportunities provided by the graduate institution play a very important part in their selection of that school. Data, however, do

TABLE 6.30a.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research according to a rationale for selecting the graduate school from which the doctorate was received: research opportunities attractive.

	Level of Importance		
Proportion of Time Spent in Research	Of Highest Importance	Moderately Important	Of No Importance
Low (0%)	35%	48%	65%
Medium (1-49%)	50	43	30
High (50-100%)	16	9	5
	101%	100%	100%
	(182)	(458)	(856)

TABLE 6.30b.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research according to the type of degree earned and a rationale for selecting the graduate school from which the doctorate was received: research opportunities attractive.

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference	
Level of Importance	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
(1) Of Highest Importance	26%	18%	(72)	40%	14%	(110)	-14%	4%
(2) Moderately Important	42%	13%	(164)	51%	7%	(294)	-8%	6%
(3) Of No Importance	61%	9%	(263)	67%	4%	(593)	-6%	5%
Percent Difference: (1)-(3)	-35%	9%		-27%	10%			

indicate that the level of importance on this reason tends to differentiate the respondents on their patterns for potential commitment to research. Second, if graduate institutions desire to develop a group of trainees in educational research, it seems relatively important that the recruitment of future graduate students include procedures for increasing the awareness of the need for extensive and intensive preparation for educational research and the awareness of the research opportunities available in the university.

Two variables operationally define types of opportunities to obtain research experiences prior to the receipt of the doctorate: participation in research projects in a department outside the school of education and a range of opportunities to obtain research experiences.* The underlying assumption is that patterns for potential commitment to research by recent doctoral recipients reflect activities in research undertaken prior to the receipt of the doctorate. Specifically, it is assumed that doctoral recipients who participated in research projects outside the school of education and who had at least one type of opportunity to obtain research experiences tend slightly more to reflect the favorable directions on the patterns.

It is further assumed that the two types of doctoral recipients who had research experiences outside the school of education tend to be similar on their patterns for potential commitment to research. Primary reason is the implied effects of being exposed to the "research community of the university" where differentiation may be less on the type of degree for which a person is working and more on the type of research being undertaken. Finally, it is assumed that doctoral recipients who had at least two types of exclusive opportunities to obtain research experiences tend to represent the favorable directions of the patterns slightly more than those who had no opportunity and those who had only one type of opportunity. Furthermore, the two types of doctoral recipients who had more than one opportunity in research activity are assumed to be rather similar on their patterns. Primary rationale is the implied effects of having extensive and intensive involvement in research experiences which sustains reinforcement for career decisions for research activity and lessens the emphasis on the issue of what type of doctorate is earned.

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*Data are not available to examine the actual processes of decision making for the types of research experiences the respondents did or did not have prior to the receipt of the doctorate. This area of inquiry still needs systematic investigation. Emphasis on interpreting data is more on the end-result of the decision-making processes--that is, the individuals did or did not have certain research experiences.

Significant results occur for at least one of the patterns, according to each of the two variables operationally defining types of research experiences prior to the receipt of the doctorate. Data lend support for the directions of results entertained in the preceding paragraphs.

Doctoral recipients are differentiated significantly on three patterns for research activity, according to participation in research projects in a department outside the school of education. Those who had this type of opportunity tend slightly more to undertake the following activities during the first year following the receipt of the doctorate: publication of a research study closely related to the topic of the dissertation (29 percent vs. 14 percent); participation in research projects (58 percent vs. 37 percent); and at least some professional time (1-100 percent) as well as a high proportion (50-100 percent) spent in research (57 percent vs. 39 percent and 12 percent vs. 6 percent, respectively).

Although percent difference between the two types of doctoral recipients who did participate in research projects outside the school of education is favorable in the direction of those awarded the Ed.D., both types of doctoral recipients are still quite similar on their pattern for publishing a research study (30 percent vs. 27 percent). Differentiation on this pattern between the two nominal values of research participation outside the school of education (yes minus no) is slightly larger for those awarded the Ed.D. rather than the Ed.D. (18 percent vs. 7 percent). Data are given in Table 6.31.

TABLE 6.31.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation according to the type of degree earned and participation in research projects in a department outside the school of education.

Research Participation outside the School of Education	Proportion Who Did Publish a Research Study			
	Type of Doctorate Earned			
	Ph.D.	(N)	Ed.D.	(N)
Yes	27%	(164)	30%	(228)
No	20%	(406)	12%	(906)

Although percent difference between the two types of doctoral recipients who had research experiences outside the school of education is favorable in the direction of those awarded the Ph.D., both types of doctoral recipients are still quite similar on their pattern for participating in research projects during the first year following the receipt of the degree (60 percent vs. 58 percent). Again, data indicate that for this pattern differentiation between the two nominal values of this type of research experience prior to the receipt of the doctorate is slightly larger for those awarded the Ed.D. rather than the Ph.D. (25 percent vs. 14 percent). Table 6.32 presents the data.

TABLE 6.32.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate according to the type of degree earned and participation in research projects in a department outside the school of education.

Research Participation outside the School of Education	Proportion Who Engaged in Research Projects			
	Type of Doctorate Earned			
	Ph.D.	(N)	Ed.D.	(N)
Yes	60%	(166)	58%	(231)
No	46%	(407)	33%	(903)

For the pattern of proportion of professional time spent in research, similar direction of results occur. For example, percent difference for the low proportion of professional time spent in research is almost negligible between the two types of doctoral recipients who had interdisciplinary research experiences outside the school of education (44 percent and 43 percent for those awarded the Ph.D. and the Ed.D., respectively). Data indicate that for the low category of the pattern percent difference between the two nominal values of this type of research experience is slightly larger for those awarded the Ed.D. (-21 percent vs. -10 percent). However, for a high proportion of professional time spent in research, the five percent difference between those who had interdisciplinary research experiences outside the school of education is favorable for the doctoral recipients of the Ph.D. (15 percent vs. 10 percent). Doctoral recipients of the Ed.D. who had the research experience are similar on this high category of the pattern to those who earned the Ph.D. and did not participate in research projects outside the school of education (9 percent and 10 percent, respectively). Data are given in Table 6.33.

TABLE 6.33.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and participation in research projects in a department outside the school of education.

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference	
Research Participation outside the School of Education	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)	(1)-(1)	(2)-(2)
Yes	44%	15%	(162)	43%	10%	(232)	1%	5%
No	54%	9%	(398)	64%	4%	(882)	-10%	5%
Percent Difference	-10%	6%		-21%	6%			

The data presented in the three previous tables lend evidence for incorporating in future models for research training a range of research experiences that doctoral students in education may have in departments outside the school of education. Relevancy of the previous statement is two-fold: experential value of interdisciplinary research within the total academic community and sustained reinforcement for career decisions for research that may be provided from such contacts within the total academic environment. Again, it is worth noting that, on patterns for research activity during the first year following the receipt of the degree, percent differences between the two types of doctoral recipients who had research experiences outside the school of education are almost negligible.

The variable for the range of opportunities to obtain research experiences prior to the receipt of the doctorate has five categories. They are: (1) exclusively research assistant to a professor; (2) exclusively research assistant in a research organization; (3) exclusively research experience termed "other";* (4) more than one type of opportunity (a combination of at least two of the three types listed above); and (5) no research experience. This variable differentiates significantly the doctoral recipients on each of the four patterns for research activity during the first year following the receipt of the doctorate.

Slightly over one-third (34 percent) of the doctoral recipients who had had more than one type of opportunity to obtain research experiences prior to the receipt of the doctorate published a research study closely related to the topic of the dissertation. One-fourth of those who had been exclusively research assistants to professors (26 percent) and exclusively research assistants in research organizations (25 percent) undertook this pattern. Two out of ten who had had exclusively a research experience termed "other" published. Only slightly over one out of ten (11 percent) of the doctoral recipients with no previous research experience checked this pattern for research activity. Tables 6.34a-6.34b (page 445) present data for the pattern for publishing a research study.

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*The nature of this type of research experience was not specified in the codebook for the questionnaire.

As shown in Table 6.34b, doctoral recipients who had had at least two types of opportunities to obtain research experiences and were awarded the Ed.D. and the Ph.D. rank first and second on this pattern for publication of a research study (36 percent and 32 percent, respectively). Given the opportunity of having been exclusively research assistants in research organizations, doctoral recipients of the Ph.D. rank third and yield an eight percent difference with those awarded the Ed.D. (30 percent vs. 22 percent). Given the opportunity of having been exclusively research assistants to professors, slightly more doctoral recipients of the Ed.D. tend to publish (28 percent vs. 23 percent). For those who had had exclusively a research experience termed "other," differentiation is favorable in the direction of those awarded the Ph.D. (22 percent vs. 18 percent). Given no research experience prior to the receipt of the doctorate, doctoral recipients of the Ph.D. tend slightly more to publish a research study (17 percent vs. 8 percent).

There are two general directions for results. First, no matter which degree is earned, doctoral recipients who had at least two types of opportunities to receive research experiences prior to the receipt of the doctoral degree tend slightly more to publish this type of research study. Second, differentiation on the pattern is quite small between the two types of doctoral recipients who had this wider range of opportunities. These two general directions will be observed for the remaining patterns for potential commitment to research.

TABLE 6.34a.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation according to the range of research opportunities undertaken prior to the receipt of the doctorate.

	Types of Research Opportunities*				
Published a Research Study	1	2	3	4	5
Yes	26%	25%	20%	34%	11%
No	74	75	80	66	89
	100%	100%	100%	100%	100%
	(198)	(115)	(523)	(109)	(765)

TABLE 6.34b.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation according to the type of degree earned and the range of research opportunities undertaken prior to the receipt of the doctorate.

	Proportion Who Did Publish a Research Study			
	Type of Doctorate Earned			
Types of Research Opportunities*	Ph.D.	(N)	Ed.D.	(N)
1	23%	(79)	28%	(119)
2	30%	(50)	22%	(65)
3	22%	(169)	18%	(354)
4	32%	(50)	36%	(59)
5	17%	(222)	8%	(543)

*Code: Range of Research Opportunities

1. Exclusively research assistant to a professor
2. Exclusively research assistant in a research organization
3. Exclusively research experience classified "other."
4. More than one type: combination of at least 2 of the items #1-#3.
5. No research experience

Compared to the remaining groups, proportionately more of the doctoral recipients (72 percent) who had at least two types of opportunities to obtain research experiences prior to the receipt of the degree participated in research projects during the first year following the receipt of the degree. Doctoral recipients who had been exclusively research assistants in research organizations and exclusively research assistants to professors tend to undertake the pattern slightly more than those who had had exclusively a research experience termed "other" (57 percent and 52 percent respectively vs. 47 percent). Only three out of ten who had had no research experience represented this pattern of research activity.

Given at least two types of opportunities to obtain research experiences again doctoral recipients awarded the Ed.D. and the Ph.D. rank first and second on the pattern of engaging in research projects (74 percent and 69 percent). Doctoral recipients of the Ph.D. who had been exclusively research assistants in research organizations and exclusively research assistants to professors rank third and fourth (64 percent and 56 percent); percent differences between the two types of doctoral recipients who had had each of the above exclusive types of experiences are 14 percent and 7 percent, respectively. For those who had had exclusively a research experience termed "other," present difference is favorable for those who were awarded the Ph.D. and rank fourth on the pattern (54 percent vs. 44 percent). The nine percent difference between those who had had no research experience is favorable for those awarded the Ph.D. (36 percent vs. 27 percent). Thus, data indicate that percent difference between the two extreme nominal values for this range of opportunities (at least two minus none) is slightly larger for those awarded the Ed.D. rather than the Ph.D. (47 percent *vs.* 33 percent). Data are given in Tables 6.35a-6.35b (page 448).

For the third pattern for potential commitment to research, doctoral recipients who had had more than one type of opportunity to obtain research experiences tend slightly less to record no professional time spent in research (30 percent) and tend slightly more to spend a high proportion of time in this activity (27 percent). Doctoral recipients who had been exclusively research assistants in research organizations rank second on at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) spent in research (61 percent and 17 percent). Compared to doctoral recipients who had had exclusively a research experience termed "other," those who had been exclusively research assistants to professors tend slightly less to spent no professional time in research (47 percent *vs.* 53 percent) and tend slightly more to represent the high category of the pattern (13 percent *vs.* 7 percent). As may be anticipated, those who had had no research experience rank low on this pattern of professional time spent in research: almost seven out of ten (68 percent) spend no time in the activity and only two percent represent the high category of the pattern. Table 6.36a (page 449) presents the data. (According to the type of degree earned and the range of opportunities to obtain research experiences prior to the receipt of the doctorate, the Chi-Square Test is not performed because of too few cases in one category. Data are still given in Table 6.36b [page 449] so that direction of results may be noted.)

TABLE 6.35a.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate according to the range of research opportunities undertaken prior to the receipt of the doctorate.

	Types of Research Opportunities*				
Engaged in Research Projects	1	2	3	4	5
Yes	52%	57%	47%	72%	30%
No	48	43	53	28	70
	100%	100%	100%	100%	100%
	(198)	(116)	(524)	(113)	(762)

TABLE 6.35b.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the degree according to the type of degree earned and the range of research opportunities undertaken prior to the receipt of the doctorate.

	Proportion Who Engaged in Research Projects			
	Type of Doctorate Earned			
Types of Research Opportunities	Ph.D.	(N)	Ed.D.	(N)
1	56%	(80)	49%	(118)
2	64%	(50)	52%	(66)
3	54%	(170)	44%	(354)
4	69%	(52)	74%	(61)
5	36%	(221)	27%	(541)

*Code: Range of Research Opportunities

1. Exclusively research assistant to a professor
2. Exclusively research assistant in a research organization
3. Exclusively research experience classified "other"
4. More than one type: combination of at least 2 of the items #1-#3
5. No research experience

TABLE 6.36a.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research according to the range of research opportunities undertaken prior to the receipt of the doctorate.

	Range of Research Opportunities*				
Proportion of Time Spent in Research	1	2	3	4	5
Low (0%)	47%	39%	53%	30%	68%
Medium (1-49%)	40	44	40	43	30
High (50-100%)	13	17	7	27	2
	100%	100%	100%	100%	100%
	(197)	(113)	(513)	(111)	(745)

TABLE 6.36b.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research according to the type of degree earned and the range of research opportunities undertaken prior to the receipt of the doctorate.**

	Proportion of Time Spent in Research							
	Type of Doctorate Earned							
	Ph.D.			Ed.D.			Percent Difference	
	(1)	(2)			(2)			
Range of Research Opportunities*	0%	50-100%	(N)	0%	50-100%	(N)	(1)-(1)	(2)-(2)
1	41%	18%	(80)	51%	9%	(117)	-10%	9%
2	41%	26%	(49)	38%	9%	(64)	3%	17%
3	50%	8%	(165)	54%	6%	(348)	-4%	2%
4	26%	31%	(49)	32%	24%	(62)	-6%	7%
5	63%	2%	(216)	70%	2%	(529)	-7%	0%

*Code: Range of Research Opportunities
1. Exclusively research assistant to a professor
2. Exclusively research assistant in a research organization
3. Exclusively research experience classified "other"
4. More than one type: combination of at least 2 of the items #1-#3
5. No research experience

**Chi-Square Test is not performed because of too few cases in one category.

As shown in Table 6.36b, doctoral recipients of the Ph.D. and the Ed.D. who had had at least two types of opportunities rank first and second on the two favorable directions of the pattern: that is, at least some professional time (1-100 percent) as well as a high proportion of time (50-100%) spent in research. Doctoral recipients of the Ph.D. who had been exclusively research assistants in research organizations are quite similar on the high category of the pattern to the previous group. However, for the low category (0 percent), they are comparable to their counterparts awarded the Ed.D. and to those who had been exclusively research assistants to professors and earned the Ph.D.; the latter group ranks fourth on the high category of pattern. Doctoral recipients of the Ed.D. who had been exclusively research assistants to professors are similar to those who had had exclusively a research experience termed "other" and earned the Ph.D., and the Ed.D. For those who had no research experiences, percent difference on at least some professional time spent in research is favorable for those awarded the Ph.D.; percent difference between the two types of doctoral recipients is negligible for the high category of the pattern. Data indicate that for the low category of the pattern percent difference between the two extreme nominal values for the range of opportunities (at least two minus none) is similar for those awarded the Ph.D. and the Ed.D. (-37 percent and -38 percent). For the high category of the pattern, percent difference is slightly larger for those awarded the Ph.D. (29 percent vs. 22 percent).

This range of opportunities for obtaining research experiences yields significant results on the fourth pattern--preference for work in doing research.

Doctoral recipients who had had more than one type of opportunity and who had been exclusively research assistants to professors tend slightly more to prefer working with at least one assistant (20 percent and 16 percent, respectively). Slightly less of these two groups tend to choose working as a member of a team (9 percent for each).

Being a leader of a team is slightly more preferred by those who had had more than one type of opportunity in research experiences and who had been exclusively research assistants in research organizations (15 and 14 percent, respectively). Slightly less of these two groups tend to check no preference for their work-patterns (17 and 16 percent, respectively).

Relative similarity exists among the five groups for registering the preference for working jointly with an associate. Those who had had exclusively a research experience termed "other" tend only slightly less to prefer this work-pattern (22 percent) and those who had been exclusively research assistants to professors tend slightly more to prefer the pattern (27 percent).

As may be anticipated, doctoral recipients who had had no research experience tend slightly more to prefer working individually (25 percent). Percent difference on this work-pattern is largest between them and the doctoral recipients who had had at least two types of opportunities and had been exclusively research assistants in research organizations (10 percent and 9 percent differences, respectively). Data are given in Table 6.37

TABLE 6.37.--Proportion of 1964 doctoral recipients in education with preference for work in doing research according to the range of research opportunities undertaken prior to the receipt of the doctorate.**

Preference for Work	Range of Research Opportunities*				
	1	2	3	4	5
With one or more assistants	16%	11%	10%	20%	10%
As a member of a team	9	16	17	9	14
As a leader of a team	7	14	9	15	5
Independently	20	16	19	15	25
Jointly with an associate	27	26	22	25	24
No preference	21	17	23	16	22
	100%	100%	100%	100%	100%
	(195)	(113)	(511)	(109)	(754)

*Code: Range of Research Opportunities

1. Exclusively research assistant to a professor.
2. Exclusively research assistant in a research organization.
3. Exclusively research experience classified "other."
4. More than one type: combination of at least 2 of the items #1-#3.
5. No research experience.

**The Chi-Square Test is not performed, according to the range of research opportunities and the type of degree earned, because of too few cases in five categories.

Two general issues result from the data presented in Table 6.37; namely, some disadvantages for having no type of opportunity for obtaining research experiences prior to the receipt of the doctorate and some advantages for having either a wide range of opportunities or exposure to and involvement in structurally organized research activity that is reflected by research organizations.

The first issue concerns the assumption that, given no form of research experience, doctoral recipients may tend slightly more to develop a perception that research activity may be limited to the "lone efforts" of the individual. As has been discussed throughout this chapter, characteristics that seem rather unfavorable for the development of researchers tend more to elicit the preference for doing research independently. Emphasis of interpreting the data is not on the fact that research activity done independently is either uncommon or necessarily non-productive. Emphasis is more on the fact that the lack of exposure to or involvement in research experiences precludes at least two types of developmental processes considered relatively important for insuring future activity in research: the actual learning of routines, skills, and sensitivities in research; and the development of confidence to engage in research activities.

The second issue concerns at least two advantages either of having more than one type of opportunity for research experiences or working exclusively in a research organization. First, each type presupposes extensive and perhaps intensive involvement in research activities. There may occur over a relatively long period of time sustained learning of various ways and means for conducting research projects. Second, given this type of learning experiences, it is then assumed that there occurs sustained development of confidence for individuals to anticipate future research participation as well as to lead others in such activities.

In summary of this last section, patterns for potential commitment to research are examined, according to four variables operationally defining certain values and processes of decision making for activity in research prior to the receipt of the doctorate.* They are: upon first entering graduate school, the original objective desired by the respondents; a rationale for selecting the graduate school from which the doctorate was received (research opportunities attractive); participation in research projects in a department outside the school of education; and a range of opportunities to obtain research experiences prior to the receipt of the doctorate.

According to the two variables of original objective at the onset of admission to graduate school and a reason for selecting the graduate school which administered the respondent's doctoral degree, significant results occur for three patterns for research activity during the first year following the receipt of the doctorate. They are publication of a research study closely related to the topic of the dissertation, participation in research projects, and proportion of professional time spent in research. Also, for each of these three patterns, significance occurs, according to each of the two values for activity in research and the type of degree earned. Data tend to support the following statements.

Doctoral recipients who upon first entering graduate school had the original objective of a doctorate in education tend slightly more than those with the original objective of no more than a master's and tend slightly less than doctoral recipients who changed to a doctorate in education to publish a research study closely related to the topic of the dissertation; to participate in research projects; and to spend at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) in research. Percent differences on the three patterns tend to be slightly less between those who earned the Ph.D. and the Ed.D. and originally desired a doctoral degree in another department but later changed to one in education. In general, these two types of doctoral recipients and those who earned the Ph.D. and desired a doctorate in education at the onset of graduate school tend to be rather similar. Doctoral recipients of the Ed.D. who originally intended a doctorate in education tend to be rather similar on the patterns to those who were awarded the Ph.D. and had the original objective of no more than a master's degree.*

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*As stated previously, data are not available to examine the actual processes of decision making for the types of research experiences the respondents did or did not have. Emphasis of interpreting data is more on the end-result of the decision-making process.

Doctoral recipients who considered that the research opportunities provided by the graduate school from which the doctorate was received were moderately important in their selection of that school tend to publish a research study, to engage in research projects, and to spend at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) in research slightly more than those who felt such a rationale was of no importance and slightly less than those who stated the rationale was of highest importance. Doctoral recipients of the Ph.D. and the Ed.D. rank first and second on the last two patterns for research activity that are listed above; the rank order is reversed for the pattern of publishing a research study. Doctoral recipients of the Ed.D. who had this high level of importance on the rationale are quite similar on the last two patterns listed above to those who earned the Ph.D. and stated the reason played a moderately important part in their selection of the school.

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*Prior to the presentation of results, assumptions and rationale for the expected directions of results are entertained. Although the data tend to support the directions of results that occur, data are not available at this time to state that, in fact, the rationale for the directions can be supported. This is an area for future research investigation.

Significant results occur for three patterns for research activity during the first year following the receipt of the doctorate according to a research experience prior to the receipt of the doctorate: participation in research projects in a department outside the school of education. Proportionately more of the doctoral recipients who did have this type of experience tend to publish a research study closely related to the topic of the dissertation, to engage in research projects, and to spend at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) in research. Doctoral recipients of the Ph.D. and the Ed.D. who had this type of interdisciplinary research experience rank first and second on each pattern as well as differ almost negligibly. (Only slightly more of those awarded the Ph.D. tend to spend a high proportion of time in research.) Doctoral recipients of the Ph.D. who did not have this experience rank third on each pattern; differentiation is large between them and either type of the doctoral recipients of the previous group. (One exception occurs: they and those awarded the Ed.D. of the previous group are similar on the high category of professional time spent in research.) Data lend support for incorporating in future models for research training research experiences outside the school of education.

According to the range of opportunities to obtain research experiences prior to the receipt of the doctorate, five types of opportunities are classified. They are: exclusively a research assistant to a professor; exclusively a research assistant in a research organization; exclusively a research experience termed "other";* more than one type of opportunity (combination of at least two of the above three items); and no research experience. Significance occurs for each of the four patterns for potential commitment to research. According to this range of opportunities and the type of degree earned, significant results are provided for the patterns for publishing a research study and engaging in research projects. For each of the two remaining patterns, the Chi-Square Test is not performed because of too few cases in some categories.

As may be anticipated, proportionately more of the doctoral recipients who had had more than one type of opportunity to obtain research experience tend to publish a research study closely related to the topic of the dissertation, to engage in research projects, and to spent at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) in research. They and the doctoral recipients who had been exclusively research assistants in research organizations tend slightly more to prefer working with one or more assistants and as a leader of a team. These two groups tend slightly less to prefer working as a member of a team and individually as well as to have no preference for their work-patterns in doing research.

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*The nature of this type of research experience was not specified in the codebook for the questionnaire.

For the patterns for publishing a research study and engaging in research projects, doctoral recipients who had had more than one type of opportunity in obtaining research experiences and earned the Ed.D. and the Ph.D. rank first and second.* Doctoral recipients of the Ph.D. who had been exclusively research assistants in research organizations rank third on each pattern. (According to each of the four nominal values that represent an actual range of opportunity to obtain research experience, differentiation on each pattern between the two types of doctoral recipients tends to be slightly larger for those who had been exclusively research assistants in research organizations.)

Except for not having any research experience prior to the receipt of the doctorate, data are not to be interpreted exclusively as to which type of opportunity is better for the development of patterns for potential commitment to research. If for no other reason, some individuals may not have the opportunity of working in research organizations, since some of the graduate institutions may not provide this type of institutional setting. However, data lend support for this general issue. Given more than one type of opportunity, doctoral recipients of the Ph.D. and the Ed.D. tend to be similar as well as relatively high on the favorable categories of the patterns. Thus, emphasis of interpreting data now is more on the types of opportunities for obtaining research experiences rather than on the type of degree earned.

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*According to the type of degree earned and this range of opportunities, the Chi-Square Test is not performed because of too few cases in one category. However, it is noted that doctoral recipients of the Ph.D. and the Ed.D. who had at least two types of opportunities rank first and second on at least some professional time as well as on a high proportion of time spent in research.

Directions of some of the results presented in this section imply that discussion of the issues on the development of professional personnel in educational research should perhaps concentrate less on the differences (real or unreal) between the two types of doctorate in education and concentrate more on the ways of providing optimum opportunities for students to obtain research experiences.

The final section of this chapter provides a brief summary of the results for patterns for potential commitment to research, according to the characteristics of the 1964 doctoral recipients in education.

C. Summary

The purpose of the summary is to present only a few highlights of the results presented in the text of chapter six. As has been stated in the previous chapters, rationale is three-fold. First, patterns for potential commitment to research have been examined, according to many individual characteristics of the 1964 doctoral recipients in education. Secondly, after each major set of individual characteristics in the text, a brief summary of the findings and implications of the data have already been given. Thirdly, in the chapter on recommendations, statements concerning future considerations for the development of professional personnel in educational research will be documented, according to the findings presented in this chapter.

Patterns for potential commitment to research during the first year following the receipt of the degree have been operationally defined by four variables. They are: publication of a research study closely related to the topic of the dissertation; participation in research projects; proportion of professional time spent in research; and preference for work in doing research now.

According to four major series of characteristics of the 1964 doctoral recipients, each pattern for potential commitment to research is examined. Each pattern is analyzed, according to the type of doctorate in education earned by the respondent and each variable operationally defining each of the major series of characteristics.

The four major series of characteristics, the number of variables included in each series, and examples of each are given.

The first series represent personal characteristics of the 1964 doctoral recipient which include one variable; namely, age at the completion of the doctoral program.

The second series are the academic patterns of the individual and have four sets of variables. Characteristics of the graduate institution from which the doctorate was received represent the first set. The eleven variables are, among others, the proportion of graduate faculty doing research, professional experience as a formal entrance requirement for admission to the graduate program, and the type of graduate preparation emphasized in the school or department of education. Major subject areas and courses taken by respondents illustrate the second set. The seven variables include, among others, the major subject area of the Bachelor's degree and the number of courses taken in college mathematics. Evaluations of the academic program portray the third set and include six variables; the variable discussed in the text of the chapter represents the place where courses were taken that taught the methods that are now being used in doing research. The fourth set delineates the patterns representing the extent of involvement in the graduate work. Of the two variables, one is the longest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received.

The third series of characteristics cover the patterns for economic resources during graduate school. Of the four variables, two are the receipt of a research scholarship or assistantship and the number of years spent in teaching or other school experience prior to the receipt of the doctorate.

The fourth series depict certain values and processes of decision making for activity in research prior to the receipt of the doctorate. Eight variables, operationally defining the fourth series, include, among others: the original objective upon first entering graduate school; rationale for selecting the graduate school from which the doctorate was awarded (research opportunities attractive); participation in research projects in a department outside the graduate institution of education; and a range of opportunities to obtain research experiences.

Before discussing significant results which occur on at least one of the patterns for potential commitment to research, a few descriptive statements on these patterns as well as on some of the individual characteristics are given.

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*Data are not available to examine the actual processes of decision making for the types of research experiences the respondents did or did not have. Emphasis of interpreting data is more on the end-result of the decision-making processes--that is, the individuals did or did not have certain types of research experiences.

Almost two out of ten doctoral recipients published a research study closely related to the topic of the dissertation. Slightly more than four out of ten engaged in research projects during the first year following the receipt of the doctorate. Only 123 individuals reported that they spent 50-100 percent of their professional time in research. Stated another way, on the average, 1.24 doctoral recipients per graduate institution of education entered positions immediately following the receipt of the degree where they devoted 50-100 percent of their professional time to research. Based on the order of frequency, the six preferences for work in doing research now are: jointly with an associate; individually; no preference; as a member of a team; with one or more assistants; and as a leader of a team. (Where significant results occur for this last pattern for potential commitment to research, doctoral recipients who had characteristics considered rather unfavorable for developing research commitment tend slightly more to prefer working by themselves.)

Predominantly most of the 1964 doctoral recipients in education decided rather late in life to begin graduate study for a doctoral degree (that is, after graduation from college). About two-thirds upon first entering graduate school had the original objective of no more than a master's degree. Slightly less than one out of ten considered the research opportunities provided by the graduate institution from which the doctorate was received to be of highest importance in their selection of that graduate school. Slightly over three-fourths received their doctorate in education when they were 33 or older.

Slightly more than one out of ten had taken at least four courses in statistical methods. Two out of ten had taken at least three courses in research methodology. Slightly over two out of ten had taken at least four courses in college mathematics. Data are not intended to imply that only through academic courses will techniques in research be learned. However, it seems that relatively few represent a rather sustained involvement in courses whose primary purposes may be to help develop a research orientation or to precipitate or sustain involvement in research experiences.

Relatively few of the 1964 doctoral recipients spent at least 18 months of continuous full-time residence as a graduate student in the institution from which the doctorate was received. Slightly over half had a range between no months and one calendar year as the longest period of continuous full-time residence. Slightly over seven out of ten had six to eleven years ot more elapsed between their first enrollment as a graduate student and the award of the doctoral degree. These factors may affect institutional efforts in developing programs for research training.

As discussed previously in chapters three and five, it appears that opportunities to obtain research experiences may not be used by graduate students in education as fully as may be expected. Slightly more than four out of ten had had no research experience prior to the receipt of the doctorate. Only slightly less than one out of ten had had more than one type of opportunity to obtain research experiences. The above facts may partially be explained by the lack of financial assistance some students experience during their doctoral work. For example, almost four out of ten had received no scholarship (fellowship) or assistantship. Only one-fourth of the doctoral recipients had received a research scholarship or assistantship; almost half of these had had no more than two semesters of this type of remuneration. If one considers the increased investments to research during the past decade by universities and such outside agencies as the federal government, it appears that relatively few of the 1964 doctoral recipients had had rather extensive involvement in research experiences prior to the receipt of the doctorate.

Significant results occur for at least one pattern for potential commitment to research by the 1964 doctoral recipients in education, according to each of the 17 variables presented in the text of the chapter.* For the purpose of the summary, attention is given only to one pattern--the proportion of professional time spent in research; the varying proportions are: no time, medium (1-49 percent), and high (50-100 percent).

Three procedures are used to present the results for this pattern. First, there is a listing of the individual characteristics that yield significant results. Second, results are briefly discussed. The third procedure provides a listing of certain issues elicited by the results.

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*In Appendix G, there is a summary of the results for each of the four patterns, according to each of the 37 variables considered for this study.

I. A listing of individual characteristics that yield significant results for the pattern for the proportion of professional time spent in research by the 1964 doctoral recipients in education during the first year following the receipt of the doctorate.

Significant results occur, according to 15 of the 17 variables that operationally define the four major series of characteristics of the 1964 doctoral recipients in education and are presented in the text of the chapter. The variables are:

1. Personal characteristics:

age at the completion of the doctoral program.

2. Academic patterns:

2.1 Characteristics of the graduate institution of education from which the doctoral degree was received:

level of admission to the graduate program (proportion of applicants that were accepted to the graduate program in the academic year of 1963-64); type of graduate preparation emphasized by the school or department of education; type of program for training in research provided by graduate institution of education; and proportion of the graduate faculty in education who are doing research.

2.2 Major subject areas and courses taken by the 1964 doctoral recipients:

major subject for the undergraduate degree; and the number of courses taken in college mathematics.

2.3 Evaluation of the academic program:

place where respondents felt they learned the courses that taught methods that they now use in doing research.

2.4 Time-patterns:

largest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received.

3. Patterns for economic resources during the graduate program:

prior to the receipt of the doctorate, the number of years spent in teaching or other school experience; and the receipt of a research scholarship or assistantship.

4. Certain values and processes of decision making for activity in research prior to the receipt of the doctorate:

upon first entering graduate school, the original objective of obtaining a degree; rationale for selecting the graduate school from which the doctoral degree was received (research opportunities attractive); participation in research projects in a department outside the graduate institution of education; and a range of opportunities to obtain research experiences.

Because of too few cases in at least one category the Chi-Square Test is not performed for the proportion of professional time spent in research, according to the type of degree earned and each of the following five characteristics: proportion of the graduate faculty doing research; major subject for the undergraduate degree; number of years spent in teaching or other school experience; longest period of continuous full-time residence; and a range of opportunities to obtain research experiences. The type of degree earned and each of the remaining 12 characteristics do yield significant results for this pattern. (Two of the 12 characteristics not included in the above listing are two organizational variables of the graduate institutions; namely, the type of legal control and professional experience as a formal entrance requirement for admission to the graduate program in education.)

II. Results.

Doctoral recipients who tend slightly more to represent the favorable categories of the pattern (that is, tend slightly less to spend no professional time in research and tend slightly more to record a high proportion of time in research) have the following characteristics:

1. Earned the Ph.D. in education
2. Completed the doctoral program at 32 or younger
3. Attended graduate institutions of education from which the doctoral degree was received that had the following organizational characteristics: a closed level of admission to the graduate program; research (alone plus others) as the type of graduate preparation emphasized; a program for training in research as a part of the regular degree program; and a high proportion of the graduate faculty doing research
4. Had psychology or education as the major subject for the undergraduate degree*
5. Had taken three or at least four courses in college mathematics**

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*Although slightly more who had psychology as the major subject of the Bachelor's degree tend to spend a high proportion of time in research, those with an undergraduate major in education tend slightly less than any group to record no professional time in research.

**Doctoral recipients with three and at least four courses differ almost negligibly on the low category of the pattern; only slightly more with at least four courses tend to spend a high proportion of professional time in research.

6. Stated that they learned methods used now in doing research mainly in courses taught outside the department of education

7. Had at least 18 months of continuous full-time residence as a graduate student in the institution from which the doctorate was received[3]

8. Had spent prior to the receipt of the doctoral degree no years or one to five years in teaching or other school experience*

9. Had received a research scholarship or assistantship

10. Upon first entering graduate school had the original objective of a doctoral degree in another department but later changed to one in education

11. Considered of highest importance in their selection of the school the research opportunities in the graduate institution from which the doctorate was received

12. Participated in research projects in a department outside the graduate institution of education

13. Had had more than one type of opportunity to obtain research experiences prior to the receipt of the degree**

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*Those who had spent one to five years tend slightly less to record no professional time in research; those who had no years in teaching or other school experience tend slightly more to represent the high category of the pattern.

**This category represents a combination of at least two of the three exclusive types of opportunities: (1) exclusively a research assistant to a professor; (2) exclusively a research assistant in a research organization; and (3) exclusively a research experience termed "other" (nature of experience not specified in the codebook for the questionnaire).

Based on the results that are provided by each of the characteristics and the type of degree earned, two types for directions of the results are presented. The first type delineates the first and second rank on the two favorable categories of the pattern; that is, at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) spent in research. The second type depicts for the high proportion of professional time spent in research the percent difference between the doctoral recipients who earned the Ph.D. and the Ed.D. and represented the category of the characteristic on which the first rank occurs for the high category of the pattern.

According to the first type for direction of results, two patterns emerge for the ranking order. One pattern shows that doctoral recipients who earned the Ph.D. and the Ed.D. and had the "favorable value" of the characteristic rank first and second on the two favorable categories of professional time spent in research. The second pattern indicates that doctoral recipients of the Ph.D. who depicted the "top two" nominal (or numerical) values of each characteristic rank first and second.*

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*One exception occurs for the variable of the original objective upon first entering graduate school. Doctoral recipients who earned the Ph.D. and had the original objective of a doctorate in education rank first on at least some professional time spent in research and second on a high proportion of time spent in the activity. Doctoral recipients who earned the Ed.D. and changed from a doctoral program in another department to one in education rank second on at least some professional time in research; those who were awarded the Ph.D. and also represented this change to a doctorate in education rank first on the high category of the pattern; percent difference between any two groups is almost negligible.

Six characteristics describe the first pattern. The favorable category of each is: (1) completed the doctoral program at 32 or younger; attended graduate institutions with (2) a closed level of admission and (3) graduate preparation for research; (4) received a research scholarship or assistantship; (5) considered the rationale of highest importance in their selection of the school; and (6) participated in research projects in a department outside the school of education.

The second pattern for the ranking order has five characteristics. The "top two" categories of each characteristic that yield the first and second rank by doctoral recipients of the Ph.D. are: (1) type of legal control (public and private);* (2) professional experience as a formal entrance requirement for admission to the graduate program (required and not required); (3) type of training program (part of the regular degree program and a special program); (4) number of courses taken in college mathematics (three and at least four);* (5) methods used now in doing research mainly learned in courses (taken outside the department of education and in the department...).**

The two rather distinct patterns for reporting the rank order for the two favorable categories of the proportion of professional time spent in research afford two general conclusions. First, no matter which pattern is discussed, doctoral recipients who earned the Ph.D. rank first on the two favorable categories of the pattern.* Second, the two patterns reflect predominantly two distinct types of characteristics; namely, individual characteristics versus institutional characteristics. For the majority of individual characteristics, the rank order represents pattern one. For the majority of institutional characteristics considered in the study, the rank order depicts pattern two. One general implication is that future models for research training should develop an interplay between the two types of characteristics--with perhaps slightly more emphasis on the individual characteristics of the potential trainee in research.

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*For the high proportion of time spent in research, the doctoral recipients of the Ph.D. who rank first and second represent the reversed order of the values of the variable.

**A one-percent difference for each favorable category of the pattern exists between the doctoral recipients of the Ph.D. who checked "in the department of education" and the doctoral recipients of the Ed.D. who checked "outside the department."

The second type for direction of results depicts for the high category of the pattern the percent difference between the doctoral recipients who earned the Ph.D. and the Ed.D. and represented the nominal (or numerical) value of the characteristic on which the first rank occurs for the high proportion of professional time spent in research. If the percent difference is no greater than five, it is assumed that the two types of doctoral recipients are relatively similar. Four of the twelve values of the characteristics meet the criterion for relatively negligible differences. The nominal values are: (1) attended graduate institutions of education that emphasized graduate preparation for research; (2) upon first entering graduate school had the original objective of a doctoral degree in another department but later changed to one in education;* considered of highest importance in their selection of the school the research opportunities provided by that graduate institution; and participated in research projects in a department outside the school of education.

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*This conclusion does not hold when discussing the results for all four patterns; that is, under some conditions, the doctoral recipients of the Ed.D. rank first on the patterns for publishing a research study, engaging in research projects, and "favorable" preferences for work in doing research.

Admittedly, the number of characteristics that yield relatively small differences between those awarded the Ph.D. and the Ed.D. are few. However, the very nature of the four variable-names strongly implies that models for preparation for research should not be exclusively represented by doctoral students registering for the Ph.D. in education.

III. A listing of certain issues elicited by the results.

1. There is need for recruitment procedures to stress the relative importance of a career in educational research--to indicate that educational research is an academic pursuit.

2. There is need for recruitment procedures to increase on the part of future graduate students in education the awareness of the research opportunities provided by the graduate institution of education and the university.

3. Patterns for potential commitment to research may be relatively insured when some of the following characteristics are incorporated in models for research training:

3.1 an institutional setting that emphasizes graduate preparation for research and that has a closed level of admission to the graduate program and a high proportion of the graduate faculty in education doing research;

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*Recall discussion of the assumptions for the directions of results of this variable (pages 418-424).

3.2 the availability of funds for research scholarships or assistantships for doctoral students;

3.3 the involvement in interdisciplinary research through participation in interdepartmental research projects outside the graduate institution of education;

3.4 the provision of at least two types of opportunities to obtain research experiences during the doctoral program (a combination of at least two of the following types of opportunities: (1) research assistant to a professor; (2) research assistant in a research organization; and (3) a general type of research experience termed "other"); and

3.5 the requirement that doctoral students have at least 18 months of continuous full-time residence in the graduate institutions.[3]

4. Evidence shows that individuals who spent at least six years in teaching or other school experience are not potential recruits for research. However, recruitment procedures for potential trainees in research should not exclude consideration of individuals who have spent between one and five yaars in this type of activity because they have relatively greater likelihood of entering research than do those who have six years or more in teaching or other school experience.

5. The development of professional personnel in research should perhaps concentrate less on the differentiation between the two types of doctoral degrees administered in education and concentrate more on the differentiation of the types of models for providing research training. The reasons for this are two-fold. First, percent differences on

patterns for research activity during the first year following the receipt of the doctorate are relatively small between the two types of doctoral recipients who represented certain characteristics considered favorable for research development. Second, since diversity already exists in administering the two types of doctoral degrees in education, more than likely local control (or distinctions) and requirements for the doctorate in education will prevail.

6. The concern for the development of professional personnel in educational research belongs to the academic community as a whole--not exclusively to the graduate institutions of education or a few graduate departments with related research interests that are outside the graduate institution of education. If educational research is, in fact, an academic pursuit, then the concern of the academic community is to recruit potential trainees in research and to provide the optimum opportunities for students to obtain research experiences.

The last chapter of the report concerns recommendations for the development of professional personnel in educational research.

Footnotes for Chapter VI

1. According to Buswell, McConnell, et al., there is a strong similarity between the 1954 and 1964 doctoral recipients in education (23). Buswell states that, where differences should have occurred that indicate expansion for training in research, there is no evidence of such growth by the data.

   In light of the increased funds for training in educational research and of the recent systematic studies that provide data for certain patterns for recommended improvement for training in research, two results may follow. First, there will be need for continued studies to assess the effectiveness of any recommendation that is undertaken. Second, certain models may be developed to measure potential as well as sustained commitment to research by doctoral recipients in education and to measure sustained commitment to the training in educational research by the academic community.

2. The variable, proportion of time devoted to research, has been operationally defined by the following procedures. First, the variable is trichotomized according to the categories: low (0 percent), medium (1-49 percent), and high (50-100 percent). Question two of the instrument asked the type of position immediately undertaken after the receipt of the doctorate. The respondents who had been coded by the California Study as "full-time research in education" (all types of position--universities, schools, State department, et cetera) were automatically programmed for the category, a high proportion of professional time devoted to research. Question 42 of the instrument asked the respondent if he were in an academic position. If the answer was affirmative, an approximate percent of his professional time spent in teaching, research, and other duties was asked. The respondent's estimate for research was programmed for the appropriate category. The respondents whose answers were negative to question 42 were automatically programmed for the category, a low proportion devoted to research. This latter group made up positions that had been coded as: "any position except full-time research in high school or elementary school"; "industry, business or non-academic position"(military, hospitals, minister, association, foundations); and "miscellaneous" (retired, unemployed, et cetera). This latter group was included so that as many as possible of the respondents to the questionnaire survey might be included on this measure. Although it is not definitely known if, in fact, some of these respondents might have spent some professional time in research, it was assumed that more than likely this group represented the category, a low proportion of professional time devoted to research.

3. Data are not available that represent varying periods of time for the last category (18 months or more) of the variable for the longest period of continuous full-time residence as a graduate student in the institution from which the doctorate was received. The

varying periods of time might be of the following order: 18 months, 24 months, 36 months, 48 months, and 60 months or more. It would be interesting to see what types of directions would occur for the patterns for potential commitment to research, according to these specified periods of time. In other words, the present data indicate that, as the number of months increase in continuous full-time residence, the proportion of cases representing the favorable categories of the patterns increase. Would the same direction exist according to the new version of the time-pattern? Or would the results yield a plateau-effect? Or, as the number of months approach the upper end, would the proportion of cases for the favorable categories of the patterns begin to decrease?

CHAPTER VII

RECOMMENDATIONS

The purpose of the chapter is three-fold: to synthesize briefly the findings of the study that have been presented in the previous chapters; to list certain issues elicited by the results; and to offer recommendations that may be considered relevant for preparation for research in education.

There have been two objectives for the study of the development of professional personnel in educational research: to identify conditions and structural characteristics of the graduate institution of education and of any sub-units of that organization that may relate to production of researchers by each of the two organizational settings; and to identify individual characteristics that may relate to patterns for potential commitment to research by recent doctoral recipients in education.

Production of researchers by graduate institutions of education has been operationally defined as the number of 1964 doctoral recipients who upon the receipt of the degree entered their first positions where 50 to 100 percent of their professional time was devoted to research. Production of researchers by research organizations has been operationally defined as the proportion of doctoral recipients over the past three years who had worked in the organization and who upon the receipt of the degree entered their first positions as full-time researchers. Potential commitment to research has been operationally defined by four types of research activity by the 1964 doctoral recipients in education during the first year following the receipt of the doctorate; namely, publication of a research study that is closely related to the topic of the dissertation, participation in research projects, proportion of professional time spent in research, and preference for work in doing research now.

Purpose I: To synthesize briefly the findings of the study.*

1. Production of researchers by graduate institutions of education.

Variables for the graduate institutions of education have been classified according to two types of organizational characteristics; namely, the external characteristics of inputs, outputs, and environment and the internal characteristics of social structure, attitudes, and activities.

According to a 48 x 48 matrix of institutional variables, significance for production of researchers by graduate institutions of education occurs under 170 sets of conditions. (A set means one institutional variable appears with another to yield significance.) Of the 48 variables, 43 appear with another variable at least once to yield significant results. Fifty-three percent of the 170 sets of conditions are provided by eight institutional variables. The remaining 80 conditions are explained by 35 variables whose frequencies for yielding significant sets of conditions range from one to four.

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*For additional results not reported in the text of the study, the reader is referred to Appendix C for production of researchers by graduate institutions of education, to Appendix D for production of researchers by research organizations, and to Appendix G for patterns for potential commitment to research by the 1964 doctoral recipients in education.

The eight institutional variables whose frequencies of appearing with other variables range from five to twenty-two are considered relatively important for discussing production of researchers by graduate institutions of education. A list of the eight variable-names with the frequency of their occurrence given in parentheses follows: an index of research quality (22); a scale of university reputation (Keniston's Scale)(17); level of admission to the graduate program in education (14); level of agreement on an opinion held by deans -- low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research (12); size of the doctoral program -- the number of registered doctoral students (10); size of the social unit -- proportion of doctoral degrees administered by the university in the academic year of 1962-63 that represent the doctorate in education (5); research as the primary responsibility of the graduate faculty in education -- based on the dean's estimate of the judgment of three groups within the graduate institution of education (5); and the institutional setting for obtaining data for the dissertation (5).

The following paragraphs provide a list of the other variables with which each of the eight charactrristics appears and a brief discussion about the direction of the more favorable results, according to each of the eight characteristics. (The "more favorable direction" is defined as the category(ies) of the institutional characteristic which seems to yield a relatively high mean number(s) for production of researchers.)

The first characteristic considered relatively important for production of researchers is an index of research quality. It has been operationally defined as the institutions mentioned or not mentioned on the question addressed to deans and research coordinators of graduate institutions of education: "Which graduate schools or departments of education in the nation are doing what you consider to be the most competent and worthwhile research?"

The twenty-two variables with which the first characteristic occurs to yield significant results for production of researchers are:

1. Inputs:
    1.1 An index of interdisciplinarily trained faculty
2. Environment:
    2.1 The type of legal control of the university
    2.2 An index of required interdisciplinary cources (number of departments outside the graduate institution of education that offer the courses)
3. Social Structure:
    3.1 Level of admission to the graduate program in education
4. Attitudes:
    4.1 Research as the primary responsibility of the graduate faculty -- based on the dean's estimate of the judgment of ten groups inside and outside the university
    4.2 Research as the primary responsibility of the graduate faculty-- based on the dean's estimate of the judgment of three groups inside the graduate institution of education

4.3 Type of graduate preparation which receives the greatest emphasis in the graduate institution of education

4.4 Preference for hiring, if an opening occured to teach ... in the graduate institution of education: professors trained outside a school of education

4.5 Level of agreement by the deans on the general educational opinion: the Ph.D. should be a research degree and the Ed.D. should be a professional degree

Level of agreement by the deans on items considered hindrances to the advancement of educational research:

4.6 Intellectural ability of people doing research in education

4.7 Types of services and studies desired by school systems

4.8 Lack of interest in educational research on the part of behavioral scientists outside schools of education

4.9 Lack of interest in research on the part of administrators of schools or departments of education

4.10 Low standards for acceptance of research articles in journals

4.11 Lack of recognition and rewards for research accomplishments

5. Activities

Formal entrance requirements for admission to the graduate program:

5.1 Version one: no requirement x at least one requirement

5.2 Version two: no teaching certificate x teaching certificate

Type of doctorate in education administered by the graduate institution:

5.3 Version one: Ph.D. only x Ed.D. only

5.4 Version two: Ph.D. only x Ed.D. only x Both the Ph.D. and the Ed.D.

5.5 Version three: proportion of doctoral students working for the Ph.D.--based on all three degree-administering situations

Academic program for research courses offered by the graduate institution of education:

5.6 Proportion of graduate education courses that are research courses

5.7 Proportion of research courses that have research entrance requirements

According to each of the twenty-two sets of conditions, the more favorable direction for production of researchers is consistently in institutions that are mentioned on an index of research quality. In sixteen situations the mean numbers for production appear to be relatively high and comparable*, no matter what the nominal (or computed) values are for the second institutional variable. In six situations, the mean production appears slightly higher, according to a specified nominal (or numerical) value of the second variable. A list is given for the category(ies) of each of these six variables that appears to yield a slightly higher mean production by institutions mentioned on an index of research quality: (1) a closed level of admission to the graduate program; (2) a high preference for hiring professors trained outside a school of education; (3) low standards for acceptance of research articles in journals not considered a hindrance to the advancement of educational research: (4) a low proportion of doctoral students working for the Ph.D. (based on all three degree-administering situations); (5) the Ph.D. only administered (based on the version of the variable: Ph.D. only x Ed.D. only)**; and (6) the Ph.D. only and both the Ph.D. and the Ed.D. administered (based on the version of the variable: Ph.D. only x Ed.D. only x both the Ph.D. and the Ed.D. and the Ed.D.).**

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*Man productions appear to be relatively comparable, if the difference between the mean numbers is no greater than 1.50. This applies for all the discussion on production of researchers by graduate institutions of education.

The second characteristic considered relatively important for production of researchers is a scale of university reputation. The variable represents Keniston's scale (70) with two modifications. First, because of too few cases in each of the categories of the scale termed the "Top 10" and the "Next 12," a category termed "the Top 22" represents these two combined categories. Second, because some graduate institutions of education belong to universities not included in the Keniston's scale, a category termed "not included in the scale" has been added to the scale.

The seventeen variables with which the second characteristic occurs to yield significant results for production of researchers are:

1. Inputs:

    1.1 An index of interdisciplinarily trained faculty

**No cases are represented for the institutions administering on the Ed.D.. Mean productions are relatively comparable for institutions administering only the Ph.D. and both the Ph.D. and the Ed.D..

1.2 Estimated proportion of funds that represent governmental sources (state plus federal) financing projects originating with and done by the graduate faculty outside any research organization

2. Environment:

2.1 The type of legal control of the university

3. Social structure:

3.1 Research organization affiliated with the graduate institution of education

4. Attitudes:

4.1 Research as the primary responsibility of the graduate faculty--based on the dean's estimate of the judgment of ten groups inside and outside the university

Level of agreement by deans on items considered hindrances to the advancement of educational research:

4.2 Intellectual ability of people doing research in education

4.3 Lack of interest in research on part of administrators of schools or departments of education

4.4 Low standards for acceptance of research articles in journals

4.5 Lack of recognition and rewards for research accomplishment

5. Activities:

Formal entrance requirements for admission to the graduate program:

5.1 Version one: no requirement x at least one requirement

5.2 Version two: no professional experience x professional experience

5.3 Type of doctorate in education administered by the graduate institution: proportion of doctoral students working for the Ph.d.--based on all three degree-administering situations

Academic program for research courses offered by the graduate institution of education:

5.4 Proportion of graduate education courses that are research courses

5.5 Proportion of research courses that have research entrance requirements

5.6 Institutional setting for obtaining data for the dissertation

5.7 Existence of a program for training in research provided by the graduate institution

5.8 Range of research topics on which research is being conducted outside any research organization

According to each of the seventeen sets of conditions, the more favorable direction for production of researchers is consistently in institutions that represent the Top 22 universities. In twelve situations the mean numbers for production appear to be relatively high and comparable, no matter the nominal (or numerical) values are for the second variable. In five situtations, the mean production appears slightly higher, according to a specified nominal (or numerical) value of the second variable. A list is given for the category of each of these five variables that yields a slightly higher mean production by institutions that belong to the Top 22 universities: (1) at least one research organization affiliated with the graduate institution of education; (2) low standards for acceptance of research articles not considered a hindrance to the advancement of educational research; (3) a high proportion of research courses that have research entrance requirements; (4) inside research organizations as the institutional setting for obtaining data for the dissertation; and (5) a high range of research topics on which research is being conducted outside any research organization.

The third characteristic considered relatively important for production of researchers is the level of admission to the graduate programs in education. It has been operationally defined as the proportion of applicants that were accepted to the graduate program in education for the academic year of 1963-64. The median case has determined the dichotomy of the variable: closed (20-76 percent) x open (77-98 percent). (The reader is referred to pages 87-88 of the text for a discussion of the operational definition of the variable.)

The fourteen variables with which the third characteristic occurs to yield significant results for production of researchers are:

1. Environment:
    1.1 Type of legal control of the university
2. Social structure:
    2.1 Size of the social unit
    2.2 Proportion of the gradute faculty in education doing research
3. Attitudes:
    3.1 Research as the primary responsibility of the graduate faculty--based on the dean's estimate of the judgment of three groups inside the graduate institution of education
    3.2 Type of graduate preparation which receives the greatest emphasis in the graduate institution of education

3.3 Preference for hiring, if an opening occurred to teach ... in the graduate institution of education: professors trained outside a school of education

3. Preference for hiring, if an opening occurred to teach ... in the graduate institution of education: professors who mostly have done research

3.5 An index of research quality

Level of agreement by deans on items considered hindrances to the advancement of educational research

3.6 Intellectual ability of people doing research in education

3.7 Lack of interest in educational research on the part of behavioral scientists outside schools of education

3.8 Lack of interest in research on the part of administrators of schools or departments of education

4. Activities:

4.1 Type of doctorate in education administered by the graduate institution: Ph.D. only x Ed.D only x Both the Ph.D. and the Ed.D.

4.2 Institutional setting for obtaining data for the dissertation

4.3 Range of research topics on which research is being conducted outside any research organization

According to each of the fourteen sets of conditions, the more favorable direction for the production of researchers is consistently in institutions that have a closed level of admission to the graduate program. In three situations, mean productions appear to be relatively high and similar, no matter what the nominal (or numerical) values are for the second variable. In eleven situations, the mean production appears slightly higher, according to a specified nominal (or numerical) value of the second variable. A list is given for the category of each of these eleven variables that appears to yield a slightly higher mean production by institutions that have a closed level of admission: (1) a small social unit; (2) a high proportion of the graduate faculty doing research; (3) a high estimate for research as a primary responsibility of the graduate faculty in education; (4) a high preference for hiring professors trained outside a school of education; (5) a high preference for hiring professors who mostly have done research; (6) a mention on an index of research quality; (7) intellectual ability of people doing research in education considered a hindrance to the advancement of educational research; (8) graduate preparation for research (alone plus others) emphasized; (9) only the Ph.D. administered; (10) inside research organizations as the institutional setting for obtaining data for the dissertation; and (11) a high range of research topics on which research is being conducted outside any research organization.

The fourth characteristic considered relatively important for production of researchers is the level of agreement on an item considered to be a hindrance to the advancement of educational research -- low standards for acceptance of research articles in journals. The nominal values of the characteristic are "yes" (major plus minor hindrance) and "no" hindrance.

The twelve variables with which the fourth characteristic occurs to yield significant results for production of researchers are:

1. Environment:
    1.1 A scale of university reputation
    1.2 An index of interdisciplinary relations

2. Social Structure:

    2.1 Size of the doctoral program

3. Attitudes:

    3.1 Research as the primary responsibility of the graduate faculty--based on the dean's estimate of the judgment of three groups inside the graduate institution of education

    3.2 Preference for hiring, if an opening occurred to teach ... in the graduate institution of education: professors who mostly have done research

    3.3 An index of research quality

Level of agreement on items considered hindrances to the advancement of educational research:

    3.4 Lack of interest in research on the part of administrators of schools or departments of education

    3.5 Types of services and studies desired by school systems

4. Activities:

    4.1 Institutional setting for obtaining data for the dissertation

Type of program for training in research provided by the graduate institution of education:

    4.2 Version one: special program x part of the regular degree program x no program

    4.3 Version two: yes (special program plus part of ... degree program) x no

    4.4 Range of research topics on which research is being conducted outside any research organization

According to eleven sets of conditions, the more favorable direction for production of researchers is consistently in institutions that have deans who do not consider low standards for acceptance of research articles in journals to be a hindrance to the advancement of educational research and that have a specified nominal (or numerical) value for the second variable. A list is given for the category(ies) of each of the eleven variables that appears to yield a slightly higher mean production by institutions whose deans do not consider the item a hindrance: (1) affiliation with the Top 22 universities; (2) a high index of interdisciplinary relations; (3) a large doctoral program; (4) a high estimate on research as the primary responsibility of the graduate faculty; (5) a high preference for hiring professors who mostly have done research; (6) a mention on an index of research quality; (7) lack of interest in research on the part of administrators of schools ... of education considered a hindrance; (8) inside research organizations as the institutional setting for obtaining data for the dissertation; (9) research training provided as a special program or as part of the regular degree program; (10) provision of a training program; and (11) a high range of research topics on which research is being conducted outside any research organization. According to one set of conditions, relatively high and similar mean productions exist when deans of institutions represent reversed levels of agreement on two items considered hindrances to the advancement of educational research. In other words, mean productions appear relatively high and comparable by institutions whose deans agree with the hindrance concerning types of services and studies desired by school systems and disagree with the hindrance concerning low standards ... and by institutions whose deans have the reversed level of agreement on these two items. Comparability has been explained by two facts. Each type of institutional setting has a proportionately comparable number of institutions that have a closed level of admission to the graduate program and are mentioned on an index of research quality -- two characteristics considered relatively important for production.

The fifth characteristic considered relatively important for production of researchers is the size of the doctoral program. The variable has been operationally defined as the number of registered doctoral students for the academic year of 1963-64. The median case has determined the dichotomy of the variable: large (84+) x small (0-83).

The ten variables with which the fifth characteristic occurs to yield significant results for production of researchers are:

1. Inputs:

    1.1 Estimated proportion of funds that represent university plus school or department of education research funds financing projects originating with and done by the graduate faculty outside any research organization

2. Outputs:

    2.1 Production rate by the graduate institution of education

3. Social Structure:

    3.1 Size of the social unit

    3.2 Proportion of the graduate faculty in education doing research

    3.3 Proportion of the graduate faculty who supervise dissertations that represent areas of their own research interests

4. Attitudes:

   4.1 Research as a primary responsibility of the graduate faculty -- based on the dean's estimate of the judgment of three groups inside the graduate institution of education

   4.2 Type of graduate preparation which receives the greatest emphasis in the graduate institution of education

Level of agreement by deans on items considered hindrances to the advancement of educational research

   4.3 Types of services and studies desired by school systems

   4.4 Low standards for acceptance of research articles in journals

5. Activities:

   5.1 Academic program for research courses offered by the graduate institution of education: proportion of graduate education courses that are research courses

According to the ten sets of conditions, the more favorable direction for the production of researchers is in institutions that have a large doctoral program. In five situations, mean productions appear to be relatively high and similar, no matter what the nominal (or numerical) values are for the second institutional variable. Of these five sets of conditions, two represent similarity of production between the institutions with a large doctoral program and a high or low rating on the second variable and the institutions with a small doctoral program and a high rating on the second variable. For the remaining five sets of conditions, mean production appears slightly higher, according to a specified nominal (or numerical) value of the second variable.

Given a large doctoral program, mean productions appear to be relatively high and similar by institutions that have: (1) a low or a high proportion of graduate education courses that are research courses; (2) deans who agree or disagree that the types of services and studies desired by school systems are a hindrance to the advancement of educational research; (3) a high or a low proportion of graduate faculty supervising dissertations in areas of their own research interests; (4) a high or a low estimate on research as a primary responsibility of the graduate faculty; (in turn, these mean productions are similar to the production by institutions with a small doctoral program and a high estimate on research as the primary responsibility); and (5) graduate preparation for research or non-research emphasized; (in turn, these mean productions are similar tothe production by institutions with a small doctoral prgram and graduate prepartion for research emphasized.).

A list is given for the category of each of the five variables that appears to yield a slightly higher mean production by instituions that have a large doctoral program: (1) a high proportion of university plus school of education research funds financing projects ... done by the graduate faculty outside any research organization; (2) a large production rate; (3) a small social unit; (4) a high proportion of the graduate faculty doing research; and (5) low standards for acceptance of research articles in journals not considered a hindrance to the advancement of educational research.

Each of the remaining three characteristics represents a tie for seventh place on the rank order of the characteristics considered relatively important for production of researchers by graduate institutions of education. They are the size of the social unit, research as the primary responsibility of the graduate faculty, and the institutional setting for obtaining data for the dissertation.

The size of the social unit has been operationally defined as the proportion of doctoral degrees awarded by the university (1962-63) that represented the doctorate in education. The median case has determined the dichotomy of the variable: small (0-17 percent) x large (18+ percent).

The five variables with which the characteristics of the size of the social unit occurs to yield significant results for production of researchers are:

1. Environment:
    1.1 An index of interdisciplinary relations
2. Social Structure:
    2.1 Level of admission to the graduate program in education
    2.2 Size of the doctoral program
    2.3 Proportion of the graduate faculty in Education doing research
3. Activities:
    3.1 Institutional setting for obtaining the data for the dissertation

According to each of the five sets of conditions, the more favorable direction for production of researchers is consistently in institutions that are a small social unit and represent a specified nominal (or numerical) value of the second variable. A list is given for the category of each of the five variables that appears to yield a slightly higher mean production by institutions that are a small social unit:

(1) a high index of interdisciplinary relations; (2) a closed level of admission to the graduate program; (3) a large doctoral program; (4) a high proportion of the graduate faculty doing research; and (5) inside research organization as the institutional setting for obtaining data for the dissertation.

Research as the primary responsiblity of the graduate faculty in education has been operationally defined as the member of groups inside the school of education that the dean estimated would rank research as the first responsibility of the graduate faculty. The three groups whose opinions the dean was asked to guess included the education faculty members, department chairmen, himself (the dean). The variable was dichotomized: high (1-3) x low (0).

The five variables with which the characteristic for research as the primary responsibility occurs to yield significant results for production of researchers are:

1. Social Structure:
    1.1 Level of admission to the graduate program in education
    1.2 Size of the doctoral program
2. Attitudes:
    2.1 Level of agreement by deans on an item considered a hindrance to the advancement of educational research: low standards for the acceptance of research articles in journals.
    2.2 An index of research quality
3. Activities:
    3.1 Institutional setting for obtaining data for the dissertation

According to three sets of conditions, the more favorable direction for production of researchers is consistently in institutions that have a high estimate on research as the primary responsibility of the graduate faculty and represent a specified nominal (or numerical) value of the second value. A list is given for the category of each of these three variables that appears to yield a slightly higher mean production by institutions that have a high estimate on research...: (1) a closed level of admission to the graduate program; (2) inside research organizations as the institutional setting for obtaining data for the dissertation; and (3) low standards for the acceptance of research articles in journals not considered a hindrance... . Given that the institutions are mentioned on an index of research quality, mean productions appear to be relatively high and similar by those that have a high estimate or a low estimate on research as a primary responsibility of the graduate faculty. Given that the institutions have a large doctoral program, mean productions appear to be relatively high and similar by institutions that have a high estimate or a low estimate on research as a parimary responsibility... .; in turn, these two mean productions are similar to the production by institutions that have a small doctoral program and a high estimate on research as a primary responsibility of the graduate faculty.

The institutional setting for obtaining data for the dissertation has been determined by the following manner. If no research organization is affiliated with the graduate institution of education, then the graduate institution has been noted as "outside research organizations." According to the questionnaire survey of directors of research organizations, if at least one director stated that students used the organization to obtain data for the dissertation, the graduate institution has been noted as "inside research organizations."

The five variables with which the characteristic of the institutional setting for obtaining data for the dissertation occurs to yield significant results for production of researchers are:

1. Environment:
    1.1 A scale for university reputation
2. Social Structure:
    2.1 Level of admission to the graduate program in education
    2.2 Size of the social unit
3. Attitudes:
    3.1 Research as a primary responsibility of the graduate faculty -- based on the dean's estimate of the judgment of three groups inside the graduate institution of education
    3.2 Level of agreement by deans on an item considered a hindrance to the advancement of educational research: low standards for acceptance of research articles in journals

According to each of the five sets of conditions, the more favorable direction for production of researchers is consistently in institutions that have inside research organizations as the institutional setting for obtaining data for the dissertation and that represent a specified nominal (or computed) value of the second variable. A list is given for the category of each of the five variables that appears to yield a slightly higher mean production by institutions that have inside research organizations at the institutional setting... : (1) affiliation with the Top 22 universities; (2) a closed level of admission to the graduate program; (3) a small social unit; (4) a high estimate on research as a primary responsibility of the graduate faculty; and (5) low standards for acceptance of research articles in journals not considered a hindrance... .

Although the institutional characteristic of the provision of a program for training in research has not been included in the list of the rank order of characteristics considered relatively important for production of researchers, a brief discussion of the variable is still given. According to provision of a program for training in research and four other organizational variables, production of researchers is significant. Two sets of conditions have already been presented; namely, (1) the provision of a program x a scale of university reputation and (2) the provision of a program x level of agreement by deans on an item considered a hindrance to the advancement of educational research: low standards for acceptance of research articles in journals. The remaining two sets of significant conditions are: (1) provision of a program x an index of required interdisciplinary courses; and (2) provision of program x the existence of a research organization. According to each of the two sets of conditions, the more favorable direction for production is in institutions that provide a program (special plus part of the regular degree program) and have the specified nominal (numerical) value for the second variable of (1) a high index of required interdisciplinary courses and (2) at least one research organization affiliated with the graduate institution. Although not significant at the .05 level, two sets of conditions yield computed H-values very near significance. They are: (1) provision of a program x range of research topics on which research is being conducted outside any research organization; and (2) provision of a program x estimated proportion of funds that represent governmental sources (state plus federal) financing projects originating with and done by the graduate faculty outside any research organization. According to each of the above two sets of conditions, the more favorable direction for production is institutions that provide a program for training in research and have a high rating on the second organizational characteristic.

Direction of the more favorable results for production has been supported by examining other organizational characteristics present in the types of institutional settings that have yielded the relatively high production. Such characteristics have included, among others: a high research index of interdisciplinary relations; a high proprtion of the graduate faculty doing research; a high range of research topics on which research is being conducted; a high level of apprenticeships on projects being conducted outside any research organization; graduate preparation for research emphasized by the graduate institution; the existence of a program for training in research; a high proportion of doctoral students working for the Ph.D. in education; and when applicable for the types of institutional settings under analysis, the "favorable category" of any of the eight variables considered relatively important for production.

In summary, evidence shows that production of researchers appears to be more favorable in institutions that have several organizational variables operating to create a research environment -- and have a program for integrating the student's experiences in research.

The next section presents the findings for the production of research organizations.

2. Production of researchers by research organizations affiliated with graduate instituions of education.

Variables for the research organizations have been classified according to two types of organizational characteristics; namely, the external characteristics of inputs, outputs, and environment and the internal chracteristics of social structure, attitudes, and activities.

According to a 48 x 48 matrix of institutional variables, significant results for production of researchers by research organizations occur under 72 conditions. (A set means one institutional variable appears with another to yield significance.) Eighteen variables do not appear with any other variable to yield sets of significant conditions. Sixty percent of the 72 conditions are provided by 27 variables whose frequencies of appearing with organizational characteristics range from one to three. Forty percent are provided by three variables whose frequencies of appearing with other institutional variables range from seven to thirteen.

These three organizational characteristcs are considered relatively important for discussing production of researchers by research organizations. A list of the three variable-names with the frequency of their occurrence given in parentheses follows: an index of interdisciplinary students: in the organization the existence of doctoral students from departments outside the school of education (13); an index of research quality for institutions to which research organizations belong (9); existence of a program for training in research provided by the research organization (7).

The following paragraphs provide a list of the other variables with which each of the three characteristics appears and a brief discussion about the direction of the more favorable results, according to each of the three characteristics. (The "more favorable direction" is defined as the category(ies) of the institutional characteristic which seems to yield a relatively high mean proportion(s) for production of researchers.)

The first characteristic considered relatively important for production of researchers is an index of interdisciplinary students. The variable has been operationally defined as the presence or absence of the institutional input of doctoral students from departments outside the graduate institution of education.

The thirteen variables with which the characteristic of an index of interdisciplinary students occurs to yield significant results for production of researchers are:

1. Inputs:

Doctoral recipients remaining in the research organizations where they received their training:

1.1 Version of the variable based on the dichotomy: yes (≥ 1) x no (0 + does not apply to situation)

1.2 Version of the variable based on the trichotomy: high (≥ 1) x low (0) x does not apply to situation

1.3 Proportion of funds that financed proposals originating with and done by researchers in the organization by the source: state plus federal government

1.4 Funds earmarked for training or academic programs provided by the organization

2. Outputs:

   2.1 An index of school services provided by the research organization

3. Environment:

   3.1 Type of graduate preparation which receives the greatest emphasis in the graduate institution of education

   3.2 Existence of a program for training in research provided by the graduate institution of education

   3.3 Research as a primary responsibility of the graduate faculty -- based on the dean's estimate of the judgment of three groups inside the graduate institution of education

   3.4 An index of research quality for the graduate instituion of education to which the research organization belongs

4. Social Structure:

   4.1 Implied control on the unit: affiliation with a department or a special program within the graduate institution of education

5. Activities:

   5.1 Period of time in which research was the primary activity of the director of the organization

   5.2 Type of research projects being performed in the organization

   5.3 Existence of a systematic apprenticeship program provided by the organization

According to the thirteen sets of conditions yielding significant results for production, there occur three types of direction of results. The first type indicates that relatively high and similar mean productions exist between organization with an index of interdisciplinary students, no matter what the nominal (or numerical) values are for the second organizational characteristic. The second type indicates that relatively high and similar mean productions exist between organizations both with or without an index of interdisciplinary students, if the nominal (or numerical) value for the second organizational characteristic is yes (or high). The third type indicates that relatively high and similar mean productions exist between organizations, when the organizations with an index of interdisciplinary students rank on the second characteristic oppoistely from the organizations with no index of interdisciplinary students.

According to each type, in some cases the comparable mean productions also represent the highest values for the production. Data on other organizational characteristics that are considered important for arrangements for research activity and training and are present in the organizations tend to support the relative comparability of mean productions and the direction of results.

According to type one for the direction of results, there are three sets of conditions where the comparable mean productions also represent the highest values. In other words, given an index of interdisciplinary students in the organization, mean productions are relatively high and similar by organizations: (1) belonging to graduate institutions that emphasize graduate preparation for research (above plus others) or graduate preparation for teaching and administration (non-research); (2) having directors whose period of time devoted primarily to research has been long or has been short;* and (3) having projects being conducted by research teams only or projects being conducted by both single investigators and research teams. Given an index of interdisciplinary students, mean productions are relatively high and similar by organizations that have a systematic apprenticeship program or do not have a training program; however, the highest mean production is yielded by organizations that have a systematic apprenticeship program and no index of interdisciplinary students.

According to type two for the direction of results, relatively high and similar mean production exist between research organizations with or without an index of interdisciplinary students, if the nominal (numerical) value for the second organizational variable is yes (or high). There are three sets of conditions where the comparable mean productions also represent the highest values. In other words, mean productions are the highest values and relatively comparable for organizations with or without an index of interdisciplinary students, if: (1) there is a high proportion of funds from governmental sources that finance projects being conducted in the organization; (2) there are earmarked funds for training or academic programs provided by the organization,** and (3) doctoral recipients remain in the organization where they received their training.* With or without an index of interdisciplinary students in the organization, mean productions appear comparable by organizations belonging to graduate institutions that have a high estimate on research as a primary responsibility of the graduate faculty; however, these productions are much lower than that by organizations having an index of interdisciplinary students and belonging to parent organizations that have no group estimated to judge research as a primary responsibility of the graduate faculty. With or without an index of interdisciplinary students, mean productions are relatively high and almost comparable by organizations affiliated with parent institutions that provide a program for training in research.

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*In turn, mean production by organizations with no index of interdisciplinary students and with directors whose time-period has been short approaches similarity to the production by organizations with an index of interdisciplinary students and with directors whose time-period has been long.

**Mean production by organization with an index of interdisciplinary students and no earmarked funds...approaches similarity to these two mean products.

According to type three for the direction of results, relatively high and similar mean productions exist between research organizations, when organizations with an index of interdisciplinary students rank on the second organizational variable oppositely from the research organizations with no index of interdisciplinary students. Three sets of conditions are represented. Mean productions are relatively high and similar, when research organizations have an index of interdisciplinary students and provide a high index of school services and when organizations have no index of interdisciplinary students and provide a low index of school services. Mean productions are quite comparable by organizations with an index of interdisciplinary students and parent organizations not mentioned on an index of research quality and by organizations with no index of interdisciplinary students and parent organizations mentioned on the index. In turn, the production of the latter type approaches similarity to the highest mean value provided by organizations having an index of interdisciplinary students and belonging to institutions mentioned on the index. Mean productions are relatively high and similar by organizations having an index of interdisciplinary students and non-affiliation as an implied control of the organization and by organizations with no index of interdisciplinary students and affiliation with a department...in the institution. In turn, the production of the latter type of organization approaches similarity to the highest mean value provided by organizations with an index of interdisciplinary students and affiliation as an implied type of control.

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*This applies for the version of the variable based on the dichotomy: yes (≥ 1) x no (0 + does not apply to situation). Organizations with an index of interdisciplinary students and no doctoral recipients remaining...have a mean production that approaches similarity to the production by organizations with no index of interdisciplinary students and doctoral recipients remaining... .

For the version of the variable based on the trichotomy, mean productions are the highest and relatively similar by organizations with an index of interdisciplinary students and with a high or a low number of doctoral recipients remaining... and by organizations with no index of interdisciplinary students and a high number of doctoral recipients remaining... .

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The second characteristic considered relatively important for production of researchers by research organizations is an index of research quality for the graduate institution of education to which the research organization belongs. The variable has been operationally defined as the institutions mentioned or not mentioned on the question addressed to deans and research coordinators of graduate institutions of education (based on the 1964 institutional survey of these respondents: "Which graduate schools or departments of education in the nation are doing what you consider to be the most competent and worthwhile research?"

The nine variables with which the characteristic of an index of research quality occurs to yield significant results for production of researchers are:

1. Inputs:

   1.1 An index of interdisciplinary students in the organization

   1.2 Proportion of doctoral students in education that work with projects in the organization

2. Environment:

   2.1 Type of legal control of the university

3. Social Structure:

   3.1 Level of facilitating research by the organization: proportion of the faculty in the organization that are not staff-members but have their research facilitated by the organization

   3.2 Level of participation in research by the faculty in the organization whose teaching load is reduced according to a full-time equivalent

4. Activities:

   4.1 Period of time in which research was the primary activity of the director of the organization

   4.2 Proportion of projects being conducted in the organization that have doctoral students working with them

   4.3 Academic credit given for the academic program provied by the organization (based on the version of the variable: credit x no credit x no academic program)

   4.4 Existence of a systematic apprenticeship program provided by the organization

According to each of the nine sets of conditions, consistently the highest values for production is provided by organizations that belong to graduate institutions mentioned on an index of research quality. However, there are two general types of direction of results. The first type indicates that the two highest values, although not appearing to be comparable, are provided only by organizations affiliated with parent organizations mentioned on an index of research quality. The second types indicates that relatively similar and high mean productions exist between research organizations, when organizations belonging to institutions rank oppositely on the second organizational variable from the research organizations not belonging to institutions mentioned on the index. Data on other organizational characteristics that are considered important for arrangements for research activity and training and are present in the organizations tend to support the relative comparability of mean productions and the direction of results.

According to the first type of direction of results, there are five sets of conditions where the two highest values for production are provided only by organizations belonging to institutions mentioned on an index of research quality. Since the values do not appear to be comparable, only the nominal (numerical) value for the second organizational variable that yields the highest mean production is noted. Mean productions are highest by organizations belonging to institutions mentioned on an index of research quality, if they have: (1) parent organizations belonging to publicly controlled universities; (2) a high level of facilitating the research of non-staff members; (3) high level of participation in research by the faculty in the organization; (4) a high proportion of doctoral students in education working with projects in the organization; and (5) a low proportion of projects being conducted in the organization that have doctoral students with them.

According to the second type for the direction of results, there are four sets of conditions. Mean productions are relatively high and comparable by organizations with an index of interdisciplinary and parent organizations not mentioned on an index of research quality and by organizations with no index of interdisciplinary students and parent organizations mentioned on the index. In turn, the production of the latter type of organization approaches similarity to the highest production provided by organizations with an index of interdisciplinary students and parent organizations mentioned on an index of research quality. Given that organizations belong to graduate institutions mentioned on an index of research quality, productions are relatively high and similar by organizations whose directors' periods of time devoted primarily in research have been short or long; in turn, mean production by organizations with directors who have had a short period of time... and parent organizations not mentioned on the index... approaches similarity to the production of the latter type of organization. Given that organizations belong to institutions mentioned on an index of research quality, productions are relatively high and similar by organizations that give credit for the academic program(s) offered in the organization or that have no academic program offered in the organization. In turn, these productions are similar to the production by organizations that give credit for the academic program(s) and belong to institutions not mentioned on the index.

However, the highest mean production is by organizations belonging to institutions mentioned on the index and not giving credit for the academic program(s) offered in the organization. Mean productions are relatively high and comparable when organizations providing a systematic apprenticeship program do not belong to institutions mentioned on the index and when organizations not providing a training program do belong to institutions mentioned on the index. In turn, the production of the latter type of organization approaches similarity to the highest mean value provided by organizations having a systematic apprenticeship program and belonging to parent organizations mentioned on an index of research quality.

The third characteristic considered relatively important for production of researchers is the existence of a systematic apprenticeship program provided by the organization. The variable has been dichotomized: yes x no ("get-around plus hire-leave policies").

The seven variables with which the characteristic of provision of a training program occurs to yield significant results for production of researchers are:

1. Inputs:

    1.1 An index of interdisciplinary students in the organization

    1.2 Doctoral recipients remaining in the research organization where they received their training:* version of the variable based on the trichotomy: high ($\geq$ 1) x low (0) x does not apply to situation

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*According to dichotomized version of the variable, the computed H-value is almost significant at the .05 level.

1.3 Proportion of funds that financed proposals originating with and done by researchers in the organization by the source: state plus federal government

2. Environment:

2.1 Proportion of doctoral students working for the Ph.D. in the graduation institution of education to which the organization belongs*

2.2 An index of research quality for the graduate institution to which the organization belongs

2.3 An index of interdisciplinary relations between the research organization and academic departments or other professional schools outside the graduate institution of education.

3. Activities:

3.1 Range of research topics on which research is being conducted

According to the seven sets of conditions yielding significant results for production of researchers, there are two types for direction of results. The first type indicates that relatively high and similar mean productions occur between organizations with or without training programs, if the numerical (or nominal) value for the second organizational variable is high (or yes). The second type indicates that relatively high and similar mean productions exist between organizations, when the research organizations with a training program rank on the second characteristic oppositely from the research organizations with no training program. Data on other organizational characteristics that are considered important for arrangements for research activity and training and are present in the organizations tend to support the relative comparability of mean productions and the direction of results.

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*According this variable and the trichotomized version of the type of program for training in research provided by the organization, significant results occur.

According to the first type for direction of results, there are four sets of conditions. Mean productions are relatively high and similar for research organizations that have or do not have a systematic apprenticeship program, if there exists: (1) an index of interdisciplinary students in the organization; (2) a high index of interdisciplinary relations; (3) a high range of research topics on which research is being conducted; and (4) a high proportion of doctoral students working for the Ph.D. in education in the parent organization. However, according to all four sets of conditions, consistently the highest mean value for the combined organizational characteristics under consideration occurs in organizations that have a systematic apprenticeship program and have the nominal (or numerical) value of no (or low) for the second organizational characteristics.

According to the second type for direction of results, there are three sets of conditions represented. Mean productions are relatively high and similar, when organizations providing a systematic apprenticeship do not belong to institutions mentioned on the index and when organizations not providing a systematic apprenticeship do belong to institutions mentioned on an index of research quality. In turn, the production of the latter type of orgnization approaches similarity to the highest mean value provided by organizations having a systematic apprenticeship program and belonging to parent organizations mentioned on the index. Mean productions are relatively high and similar, when organizations providing training programs do not have doctoral recipients remain in the organizations where they received their training and when organizations not providing a training program do have doctoral recipients remain. However, the highest mean production is by organizations that have a training program and doctoral recipients remaining in the organization. Mean productions are relatively high and similar, when organizations providing no training program have a high proportion of funds from governmental sources and when organizations providing a training program have a low proportion of funds. In turn, the production of the latter type of organization approaches similarity to the highest mean value provided by organizations with a systematic apprenticeship program and a high proportion of funds from governmental services.

Characteristics of the research organizations that are used to analyze the results for production include, among others: a high proportion of doctoral students in education working in the organization; an index of interdisciplinary students; doctoral recipients remaining in organizations where they received their training; an index of interdisciplinary researchers on the staff; a high research index of interdisciplinary relations; funds earmarked for programs provided by the organization; affiliation as an implied control on the unit; a high level of facilitating the research of non-staff members; and a systematic apprenticeship program provided by the organization. These characteristics have been considered relatively important for arrangements for research activity and training in the organization. Two situations appear to exist to yield relative similarity of mean productions by organizations, according to these characteristics. The fist situation shows that relative similarity on the characteristics exists between the two types of organizations being compared. For example, given an index of interdisciplinary students in the organization, organizational characteristics and institutional outputs of researchers are relative comparable for organizations belonging to graduate institutions emphasizing graduate preparation for research or for non-research. The second situation shows that comparable factors coupled with compensatory factors may be operating to equalize sufficiently the few differences that exist between the two types of organizations being compared. In other words, some similarities on certain organizational characteristics exist. According to the few differences between the two types of organizations, when one types has proportionately more represented on one characteristic, the other type of organization has proportionately more represented on another characteristic. For example, comparable factors coupled with compensatory factors seem to be operating to equalize sufficiently any differences an organizational characteristics and to yield relative similar mean productions by organizations having an index of interdisciplinary students and a high index of school services and by organizations with no index of interdisciplinary students and a low index of school services.

Based on the cluster of organizational characteristics that are proportionately more represented in a type of organization, reversed expectations occur for some mean productions of researchers. For example, in organizations having an index of interdisciplinary students and provding a systematic apprenticeship program proportionately more have a cluster of characteristics considered important for arrangements for research activity and training. Yet the mean production of researchers by this type of organization is (1) similar to that by organizations with no training program and an index of interdisciplinary students and (2) much lower than the production by organizations providing a training program and having no doctoral students outside the school of education. Data tend to support the assumption that a large "volume" of research activity and student participation is present in the organizations with a training program and an index of interdisciplinary students. One explanation for the mean production not being as high as might be expected is that these organizations may have difficulties in effectively integrating and individualizing for the students the experiences that may be provided in the organization -- experiences that culminate in career decisions for full-time activity in research.

The next section presents the findings for the patterns for potential commitment to research by recent doctoral recipients in education.

3. Patterns for potential commitment to research by the 1964 doctoral recipients in education.

According to four major series of characteristics of the 1964 doctoral recipients, each pattern for potential commitment to research has been examined. In turn, each pattern has been analyzed, according to the type of doctorate in education earned by the respondent and each variable operationally defining each of the major series of characteristics.

The four major series include the four following types of characteristics: personal characteristics, academic patterns, patterns for economic resources, and values and processes of decision making for activity in research prior to the receipt of the doctorate.*

According to each of the seventeen characteristics presented in the text of the report, significant results for at least one pattern occur. However, for the purpose of this section, attention is given only to one pattern; namely, the proportion of professional time spent in research during the first year following the receipt of the doctorate. The varying proportions for the variable are: no time, medium (1-49 percent), and high (50-100 percent).

Doctoral recipients who tend slightly more to represent the favorable categories of the pattern (that is, tend slightly less to spend no professional time in research and tend slightly more to record a high proportion of time in research) have the following characteristics:

1. Earned the Ph.D. in education
2. Completed the doctoral program at 32 or younger
3. Attended graduate institutions of education from which the doctoral degree was received that had the following organizational characteristics: a closed level of admission to the graduate program; research (alone plus others) as the type of graduate preparation emphasized;

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*Data are not available to examine the actual processes of decision making for the types of research experiences undertaken prior to receipt of the doctorate. Emphasis of interpreting data is more on the end-result of the decision-making process; that is, the individual did or did not have certain types of research experiences.

a program for training in research as a part of the regular degree program; and a high proportion of the graduate faculty doing research

4. Had psychology or education as the major subject for the undergraduate degree.*

5. Had taken three or at least four courses in college mathematics.**

6. Stated that they learned methods used now in doing research mainly in courses taught outside the department of education

7. Had at least 18 months of continuous full-time residence as a graduate student in the institution from which the doctorate was received.

8. Had spent prior to the receipt of the doctoral degree no years or one to five years in teaching or other school experience.***

9. Had received a research scholarship or assistantship

10. Upon first entering graduate school had the original objective of a doctoral degree in another department but later changed to one in education

11. Considered of highest importance in their selection of the school the research opportunities provided by the graduate institution from

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*Although slightly more who had psychology as the major subject of the Bachelor's degree tend to spend a high proportion of time in research, those with an undergraduate major in education tend slightly less than any group to spend no professional time in research.

**Doctoral recipients with three or at least four courses differ almost negligibly on the low category of the pattern; only slightly more with at least four courses tend to spend a high proportion of professional time in research.

***Those who had spent one to five years tend slightly less to record no professional time in resarch; those who had no years in teaching or other school experience tend slightly more to represent the high category of the pattern.

which the doctorate was received

12. Participated in research projects in a department outside the graduate institution of education

13. Had had more than one type of opportunity to obtain research experiences prior to the receipt of the doctorate;(category represents a combination of at least two of the three exclusive types of opportunities: (1) exclusively a research assistant in a research organization; (2) exclusively a research assistant to a professor; and (3) exclusively a research experience termed "other.")*

According to the type of degree earned and twelve characteristics, significant results occur for the pattern for professional time spent in research.** Based on the results that are provided, two types for directions of the results are presented. The first type delineates the first and second rank on the two favorable categories of the pattern for research activity; that is, at least some professional time (1-100 percent) as well as a high proportion of time (50-100 percent) spent in research. The second type depicts for the high proportion of professional time spent in research the percent difference between the doctoral recipients who earned the Ph.D. and the Ed.D. and represented the category of the characteristic on which the first rank occurs for the high category of the pattern.

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*Nature of experience not specified in the code book for the questionnaire.

**Because of too few cases in at least one category the Chi-Square Test is not performed, according to the type of degree earned and each of the following characteristics: proportion of the graduate faculty doing research; major subject for the undergraduate degree; number of years spent in teaching or other school experience; longest period of continuous full-time residence; and a range of opportunities to obtain research experiences prior to the receipt of the doctorate. However, observations on the direction of results are still noted in chapter six.

According to the first type for direction of results, two patterns emerge for the ranking order. One pattern shows that doctoral recipients who earned the Ph.D. and the Ed.D. and had the "favorable value" of the characteristic rank first and second on the two favorable categories of professional time spent in research. The second pattern indicates that doctoral recipients of the Ph.D. who depicted the "top two" nominal (or ordinal) values of each characteristic rank first and second.*

Six characteristics describe the first pattern. In other words, doctoral recipients of the Ph.D. and the Ed.D. rank first and second on the two favorable categories for professional time spent in research, if they: (1) completed the doctoral program at the age of 32 or younger; attended graduate institutions with (2) a closed level of admission and (3) graduate preparation for research; (4) received a research scholarship or assistantship; (5) considered the rationale, research opportunities provided by the graduate institution, of highest importance in their selection of the school from which the doctorate was received; and (6) participated in resarch projects in a department outside the school of education.

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*One exception occurs for the variable of the original objective upon first entering graduate school. Doctoral recipients of the Ph.D. who had the original objective of a doctorate in education rank first on at least some professional time spent in research and second on a high proportion of time spent in the activity. Doctoral recipients of the Ed.D. who originally intended a doctoral degree in another department but later changed to one in education rank second on at least some professional time spent in research; those who earned the Ph.D. and represented this change to a doctoral degree in education rank first on the high category of the pattern. However, all three groups are really quite similar on the high category of the pattern; percent difference between any two groups is almost negligible.

The second pattern for the rank order has five characteristics. The "top two" nominal (ordinal) values of each characteristic that yield the first and second rank by doctoral recipients awarded the Ph.D. are: (1) type of legal control (public and private);* (2) professional experience as a formal entrance requirement for admission to the graduate program (required and not required); (3) type of training program provided by the graduate institution (part of the regular degree program and a special program); (4) number of courses taken in college mathematics (three and at least four);* (5) methods used now in doing research mainly learned in courses (taken outside the department of education and inside the department...).**

The two rather distinct patterns for reporting the ranking order for the two favorable categories of the pattern afford two general conclusions. First, no matter which pattern is discussed, doctoral recipients awarded the Ph.D. rank first on the two favorable categories of the pattern.*** Second, the two patterns reflect predominantly two distinct types of characteristics; namely, individual characteristics versus institutional characteristics. For the majority of individual characteristics, the rank order represents pattern one. For the majority of institutional characteristics considered in the study, the rank order depicts pattern two. One general implication is that future models for research training should develop an interplay between the two types of characteristics -- with perhaps slightly more emphasis on the individual characteristics of the potential trainee in research.

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*For the high proportion of time spent in research, the doctoral recipients of the Ph.D. who rank first and second represent the reversed order of the values of the variable.

**A one-percent difference for each favorable category of the pattern exists between the doctoral recipients of the Ph.D. who checked "inside the department of education" and the doctoral recipients of the Ed.D. who checked "outside the department."

***This conclusion does not hold when discussing the results for all the patterns; that is, under some conditions, the doctoral recipients of the Ed.D. rank first on the patterns for publishing a research study closely related to the topic of the dissertation and engaging in research projects.

The second type for direction of results depicts for the high category of the pattern the percent difference between the doctoral recipients who were awarded the Ph.D. and the Ed.D. and represented the nominal (or numerical) value of the chaaracteristic on which the first rank occurs for the high proportion of professional time spent in research. If the percent difference is no greater than five, it is assumed that the two types of doctoral recipients are relatively similar. Four of the twelve values of the characteristics meet the criterion for relatively small differences between the two types of doctoral recipients in education. The nominal values are: (1) attended graduate institutions of education that emphasized graduate preparation for research (alone plus others); (2) upon first entering graduate school had the original objective of a doctoral degree in another department but later changed to one in education; (3) considered of highest importance in their selection of the school from which the doctorate was received, the research opportunities provided by the graduate institution; and (4) participated in research projects in a department outside the school of education.

Admittedly, the number of characteristics that yield relatively small differences between those awarded the Ph.D. and the Ed.D. are few. However, the very nature of the four variable-names strongly implies that models for preparation for research should not be exclusively represented by doctoral students registered for the Ph.D. in education.

Purpose II: To list certain issues elicited by the results.

1. Issues elicted by the results on the production of researchers by graduate institutions of education.

Since many issues have been elicted by the results, attention is given only to two major points; namely, organizational characteristics present in institutions that provided almost two-thirds of the individuals that met the criterion for the operational definition of production of researchers by graduate institutions; and the relevancy of a program for training in research.

1.1 Organizational characteristics present in institutions that have been mentioned on an index of research quality and have provided almost two -thirds of the doctoral recipients that met the criterion for the operational definition for production of researchers by graduate institutions of education.

Almost all of the graduate institutions belong to universities that have been classified as the Top 22 on a scale for university reputation. All but one have a large doctoral program. Over three-quarters have a large production rate. Almost nine out of ten are a small social unit within the total university. Almost two-thirds have a high index of interdisciplinarily trained faculty.

Two-thirds have a closed level of admission to the graduate program. Only a relatively few have at least one formal entrance requirement for admission to the graduate program. Seven out of ten have a high proportion of the doctoral students working for the Ph.D. in education. Slightly over half emphasize graduate prepartion for research (alone plus others). Two-thirds have a high proportion of research courses that have research entrance requirements.

About eight out of ten have a high proportion of the graduate faculty doing research and provide a program for training in research. Seven out of ten have a high level of apprenticehips on projects being conducted outside any research organization.

In summary, evidence shows that production of researchers is relatively high by institutional settings that have a cluster of the above organizational characteristics. The word, "cluster," is used because data show that, according to any two organizational variables, the institutional setting yielding the highest mean value also has many other characteristics considered important for research activity and training. For example, according to the existence of a program for training in research and the level of agreement on an item that low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research, significance for production occurs. The highest mean value is by institutions that have a training program and whose deans disagree with the item. Comparisons of the institutions with training programs show that proportionately more of the institutions whose deans disagree with the item have a closed level of admission to the graduate program, a high proportion of the graduate faculty doing research and a mention on an index of research quality. Data also indicate that, even when the cluster of characteristics is relatively small, production is still in the direction of being favorable. For example, according to the existence of a program for training in research and an index of required interdisciplinary courses, production is significant. The highest mean value is by institutions with a training program and a high index of...interdisciplinary courses. Production by institution with a low index... and no training program is slightly lower than that of the former institutional setting and yet slightly higher than either of the productions by the remaining two types of institutional settings. Comparisons on three other organizational characteristics show that the four institutional settings differ. The two types of settings that rank first and second on production also rank first and second on a high proportion of the graduate faculty doing research, a large doctoral program, and a mention on an index of research quality.

Thus, evidence indicates that many characteristics considered relatively important for arrangements for research activity and training must be operating within the institutional setting in order for production of researchers to be relatively high.

1.2 Relevancy of a program for training in research.

As has been noted earlier, only a very few sets of significant conditions are provided by the institutional activity of a training program and another organizational characteristic. A key issue elicited from these results concerns the question of why there seems to be so few sets of significant conditions. Three possible explanations are given.

First, some of the institutional variables based on the available data may still be too grossly defined to measure differences, if any. An example is the level of apprenticeships on projects. This measure is limited only to projects being conducted outside any research organization and to all graduate students rather than exclusively to doctoral students.

Second, the relatively few sets of significant conditions may be reflecting an insufficiently sustained commitment of institutional resources to this type of activity. In other words, differentiation for production of researchers, according to the institutional activity of a training program and many other organizational variables, will occur only over a relatively long period of time in which institutional resources to the activity of a training program have been sufficiently large and sustained.

Third, it may be more reasonable to assume only a very few and more salient characteristics with the institutional activity of a training program will yield signficant results for production. In other words, it seems reasonable to expect a relatively high production by institutions with a large volume of research activity and a program for training in research. Considering a large volume of research activity to imply sustained involvement in research by the institution, one may expect the doctoral students in the institutional setting to be more aware of continuing this professional commitment to research. A large volume of research activity may be noted by such characteristics as a high proportion of the graduate faculty doing research, a high range of research topics on which research is being conducted outside any research organization, the existence of a research organization, and a high proportion of funds from governmental sources for financing research projects being conducted outside any research organization. According to each of the four activities and the existence of a training program, significance occurs or is relatively close. In each set, the highest mean production is by institutions with a training program and the characteristic designated a large volume of research activity. Thus, results for production of researchers appear to be most favorable in institutions that have a large volume of research activity and a program for integrating the student's experiences in research.

2. Issues elicted by the results on the production of researchers by research organizations

Four major issues are presented. Three issues concern the effects on the institutional output of researchers by the availability of funds for research activity and training, the provision of school services by the organization, and a large volume of research activity and student participation in the organization. The fourth issue examines the potential need for research organizations to develop -- rather autonomously in some cases from the parent organization -- their own arrangements for research activity and training that are considered important for their own production of researchers.

2.1 The effects on production of researchers by the availability of funds for research activity and training.

It appears that organizations with a high proportion of economic resources and a systematic apprenticeship program provide a relatively high production of researchers. Furthermore, it appears that, even if no training program exists, organizations with a high proportion of economic resources available for research activity still yield a very favorable institutional output of researchers.

The set of conditions used to illustrate this issue is the existence of a systematic apprenticeship program x the proportion of funds from governmental sources that finance proposals originating with and done by researchers in the organization.*

The highest mean production is by the institutional setting with a systematic apprenticeship program and a high proportion of funds from governmental sources. According to an analysis of ten other organizational characteristics present in the four types of organizations represented for this set of conditions, proportionately more of the organizations that yield the highest mean value have the characteristics considered important for research activity and training.**

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*Two other sets of conditions illustrate the issue: an index of interdisciplinary students x the proportion of funds from governmental sources...; and an index of interdisciplinary students x earmarked funds for training or academic programs provided by the organization.

**The organizational variables include: a high proportion of doctoral students in education working in the organization; an index of interdisciplinary students; doctoral recipients remaining in the organizations where they received their training; a high index of interdisciplinary researchers on the staff; funds earmarked for programs provided for research; a high index of interdisciplinary relations; an affiliation with a parent organization mentioned on an index of research quality; implied control: affiliation with a department or special program within the parent organization; a high level of facilitating the research of non-staff members; and a high proportion of the budget provided for research.

Comparision between types of institutional settings are made to illustrate the point that, even if no training program exists, organizations with a high proportion of funds from governmental yield a very favorable institutional output of researchers.

Comparison between the two institutional settings with no training program shows that mean production by organizations with a high proportion of funds is three times larger than that by organizations with a low proportion of funds. However, analysis of other characteristics present in these two institutional settings indicates that a relatively similar cluster of organizational characteristics important for research activity exists between the two institutional settings. According to the differences on a few characteristics, one type of organization is proportionately more represented on one characteristic, while on another characteristic proportionately more of the other type of organization are represented. Thus, each type of organization seems to have comparable plus compensatory factors operating to yield a relatively similar cluster of organizational variables -- except for the proportion of funds available for research activity. For example, both types of settings are similar on four characteristics: a high index of inter-disciplinary researchers on the staff; funds earmarked for programs provided by the unit; a high proportion of the budget provided for research; and a high index of interdisciplinary relations. Proportionately more of the organizations with a low proportion of funds have these three characteristics: a high proportion of doctoral students in education working in the organization; doctoral recipients remaining in the organizations where they received their training; and a high level of facilitating the research of non-staff members. However, proportionately less of the organizations with a low availability of funds are represented on these three characteristics: an index of interdisciplinary students;* affiliation as the implied control on the organization; and affiliation with a parent organization mentioned on an index of research quality.*

Comparison between the two institutional settings with a high proportion of funds shows that mean production by organizations with a training program is about one and three-tenths larger than that by organizations with no training program. Analysis of other characteristics present in these two institutional settings shows similarity on only one characteristic; namely, an index of interdisciplinary students. Proportionately more of the organizations with a training program represent the remaining nine characteristics.

Thus, evidence shows that the availability of funds and a systematic apprenticeship program are very important characteristics for a relatively high institutional output of researchers. Evidence further indicates that a high proportion of economic resources for research activity differentiates positively the production of researchers by organizations with no training program.

2.2 The effects on production of researchers by the provision of school services by the organization.

It appears that research organizations that have a high provision of school services may also yield a relatively high production of researchers, if arrangements for research activity and training are relatively insured. It appears that research organizations that have a low provision of school services may not necessarily yield a relatively high production of researchers, if there does not exist a sufficient number of characteristics considered important for arrangements for research activity and training.

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*Since proportionately more of the organizations with a high proportion of funds from governmental sources have these two characteristics which have been shown to yield a large percent of the sets of significant conditions for production, it may be that these two characteristics plus a high proportion of funds are operating to yield the higher mean production.

The set of conditions used to illustrate this issue is an index of interdisciplinary students in the organization x an index of school services provided by the organization.

Results show that the mean productions are highest and relatively similar by organizations with no index of interdisciplinary students and a low index of school services and by organizations with an index of interdisciplinary students and a high index of school services; (the former is about one and two-tenths smaller than the latter production.). Analysis of other characterisitics present in these two institutional settings shows that comparable plus compensatory factors may be operating to equalize sufficiently the differences and to yield the comparable mean productions. For example, both types are similar on three characteristics: a high proportion of doctoral students in education working in the organization; doctoral recipients remaining in the organizations where they worked; and a high proportion of funds from governmental sources that finance projects being conducted in the organization. According to the differences on a few characteristics, one type of organization is proportionately more represented on one characteristic, while on another characteristic proportionately more of the other type of organization are represented. For example, proportionately more of the organizations with the low index of school services have these two characteristics: earmarked funds for training or academic programs provided by the organization and affiliation with parent organizations mentioned on an index of research quality. However, proportionately less of the organizations with a low index of school services have these two characteristics: a high index of interdisciplinary researchers on the staff and a systematic apprenticeship program. Thus, there appears to be for these two institutional settings a relatively comparable cluster of characteristics favorable for research activity and training.

Comparisons between the two institutional settings that have a low index of school services shows that mean production by organizations with no index of interdisciplinary students is almost one and sixth-tenths larger than that by organizations with an index of interdisciplinary students. Analysis of other characteristics present in these two institutional settings shows similarity on only one characteristic; namely, a systematic apprenticeship program. Proportionately more of the organizations with no doctoral students outside the school of education represent the remaining characteristics for research activity and training.

Comparision between the two institutional settings that have a high index of school services shows that mean production by organizations with an index of interdisciplinary students is almost fourteen times larger than that by organizations with no index of interdisciplinary students. Analysis of other characteristics present in these two institutional settings shows similarity on only two characteristics:

a high proportion of doctoral students in education working in the organization and funds earmarked for training or academic programs provided by the organization. Proportionately more of the organizations with doctoral students outside the school of education represent the remaining characteristics for research activity and training.

Thus, evidence shows that if research orgnizations that have a high provision of school services, desire a high institutional output of researchers, arrangements for research activity and training must be relatively insured. Evidence further, indicates that if research organizations that have a low provision of school services desire a higher institutional output of researchers, a sufficient number of characteristics favorable for research activity and training must be present.

2.3 The effects on production of researchers by a large volume of research activity and student participation in the organizaion.

Results for production of researchers have shown the relevancy of having in the organization a sufficient number of characteristics favorable for research activity and training. However, the question of the volume of research activity and student participation in a given institutional setting is germane. Analysis of data imply that a large volume of activity may create difficulties for the organization to individualize and integrate sufficiently the research experiences provided by the organization -- experiences that culminate in career decisions for full-time research by the doctoral students.

The set of conditions used to illustrate this issue is the existence of a systematic apprenticeship program x the range of research topics on which research is being conducted.*

Results show that the lowest mean production is by organizations that have no training program and a small range of research topics. Analysis shows that proportionately less of the organizations yielding the lowest mean value represent the characteristics important for research activity and training. The highest mean production is by organizations that have a systematic apprenticeship program and a small range of reserch topics. Analysis indicates a favorable cluster of characteristics for research activity and training exists in this institutional setting. However, it appears that the most favorable cluster of characteristics may exist in organizations with a training program and a large range of research topics. The mean production for this institutional setting, however, is next to the smallest value.

Comparison between the two institutional settings that have no training program shows that production by the organizations with a large range of research topics is almost four times larger than that by organizations with a small range of topics. Analysis of other characteristics present in the institutional settings indicates that the very low mean production by organizations with a small range of research topics may be reflecting a very small volume of research activity. For example, both types of settings are similar on three characteristics: an index of interdisciplinary researchers on the staff: earmarked funds for training or academic programs provided by the organization; and a high proportion of funds from governmental sources. Only on one characteristic are proportionately more of the organizations with a small range of topics represented; namely, affiliation as an implied control on the organization. Proportionately more of the organizations with a large range of research topics represent the six following characteristics: a high proportion of doctoral students in education working in the organization; an index of interdisciplinary students; doctoral recipients remaining in the organizations where they received their training; a high research index of interdisciplinary relations; a high level of facilitating the research of non-staff members; and an affiliation with parent organizations mentioned on an index of research quality.

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*Four other sets of conditions illustrate the issue: affiliation with parent organizations mentioned on an index of research quality x the proportion of projects being conducted in the organizations that have students with them; an index of interdisciplinary students x the existence of a systematic apprenticehips program; an index of interdisciplinary relations x the existence of a systematic apprenticehip program; and the proportion of doctoral students working for the Ph.D. in education in the parent organization x the existence of a systematic apprenticeship program.

Comparsion between the two institutional settings that have a large range of research topics on which research is being conducted shows that the mean production by organizations with a training program is almost one and a half times smaller than that by organizations with no systematic apprenticeship program. Analysis of other characteristics present in the two settings indicates similarity on one; namely, affiliation with parent organizations mentioned on an index of research quality. Proportionately more of those with no training program do facilitate the research of non-staff members. For the remaining eight characteristics, proportionately more are represented in orgnizations with a systematic apprenticeship program.

Comparison between the two institutional settings that have a systematic apprenticeship program shows that production by organizations with a small range of topicsis slightly three times larger than that by organizations with a large range of research topics. Analysis of other characteristics present in the settings indicates similarity on three characteristics: a high proportion of doctoral students in education working in the organization; a high index of interdisciplinary researchers on the staff; and affiliation with parent organizations mentioned on an index of research quality. Proportionately more of the organizations with a large range of topics appear* to represent the remaining characteristics.

A small range of research topics may indicate that at a given time there is a small volume of participation. However, in the institutional setting that has a systematic apprenticeship program plus a few characteristics favorable for research activity, there may be more sustained efforts by the organization to individualize and to integrate sufficiently the research experiences provided by the organization. The very high mean production by this type of organization may be reflecting such dynamics.

With or without a systematic apprenticehip program, organizations that have a large range of research topics on which research is being conducted do reflect a large volume of activity. And, as has been discussed, proportionately more of those with a training program represent the cluster of favorable characteristics for research activity and training. Why then are the mean productions relatively comparable? One explanation may lie with the characteristic that almost all the organizations with no training program have and that they proportionately more represent: a high level of facilitating the research of non-staff members. A doctoral student in this institutional setting may be primarily influenced to affiliate with the organization by his major professors whose research is being facilitated. In this institutional setting, the processes for individualizing and sufficiently integrating research experiences may be reflecting the efforts of the potential role model, the major professor.

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*The N is small (5) for the k sample for organizations with a small range of research topics and a training program. Percentages for other characteristics present in the settings are determined by questions answered. Thus, percentaging for some characteristics could not be performed.

Data are not available at this time to state that all doctoral students who affiliate with organizations that have a large range of research topics and a training program do, in fact, participate in the training program. Even if some are not participants in the systematic apprenticeship program, the question of what processes are used to individualize the research experiences received in this type of institutional setting is still relevant. In the final analysis, the unexpectedly lower mean production may indicate that this type of institutional setting has some difficulties in individualizing and sufficiently integrating the research experiences received by the students.

2.4 The potential need for research organizations to develop -- rather automously in some cases from the parent organization -- their own arrangements for research activity and training that are considered important for their own production of researchers.

Research organizations may have arrangements for research activity and training that complement existing characteristics favorable for production of researchers by the parent organization. Or they may have goals and activities for research not necessarily found in the parent organization. If research organizations neither have their own characteristics for research activity and training nor belong to parent organizations that have institutional goals and activities for research, then it may follow that production of researchers by research organizations is relatively low.

The set of conditions used to illustrate this issue is an index of interdisciplinary students in the organization x an estimate on research as the primary responsibility of the graduate faculty (based on the dean's estimate of the judgment of three groups in the graduate institution of education).

As one will recall, the more favorable results for production by graduate institutions of education are predominantly by the institutions that have a high estimate on research as the primary task of the faculty. This conclusion does not hold for production of researchers by research organizations.

Production is lowest by organizations that have no index of interdisciplinary students and a low estimate on research by the parent organization. Proportionately less of these organizations have characteristics favorable for research activity and training. Data supports the relatively low mean value for production.

Comparison between the two institutional settings whose parent organizations have a high estimate on research as the primary task of the faculty shows that production by organizations with an index of interdisciplinary students is slightly less than one and a half times larger than that by organizations with no doctoral students outside the school of education. Analysis of other characteristics present in the settings indicates similarity on two: a systematic apprenticeship program and affiliation with parent organizations mentioned on an index of research quality. Proportionately more of the organizations with an index of interdisciplinary students have these two characteristics: a high index of interdisciplinary researchers on the staff and a high level of facilitating the research of non-staff members. However, proportionately less of them have these two characteristics: doctoral recipients remaining in the organizations where they received their training and an affiliation with a department or special program in the parent organization. Thus, comparable plus compensatory factors may be operating to equalize sufficiently the few differences between these two institutional settings and to yield the relatively similar mean productions.

The highest mean production is by organizations with an index of interdisciplinary students and a low rating on research by the parent organization. (This production is two to almost three times larger than the productions by the two institutional settings whose parent organizations have a high estimate on research as the primary responsibility of the graduate faculty.) Comparisons between the two institutional settings that have an index of interdisciplinary students show similarity on two other characteristics: a systematic apprenticeship program and a high level of facilitating the research of non-staff members. Proportionately more of the organizations whose graduate institutions have a low rating on research as a primary task of the faculty have the remaining characteristics; such as, a high proportion of doctoral students in education working in the organization; doctoral recipients remaining in the organizations where they received their training; a high index of interdisciplinary researchers on the staff; and earmarked funds for training or academic programs provided by the organization.

Analyses of data indicate the potential need for research organizations to develop -- rather autonomously in some cases from the parent organization -- their own arrangements for research activity and training that are considered important for their own institutiional output of researchers.

3. Issues elicited by the results on patterns for potential commitment to research by the 1964 doctoral recipients in education.

Three issued are presented: characteristtics that may relatively insure research activities by doctoral recipients in education during the first year following the receipt of the doctorate; implications for recruitment procedures; and an emphasis and a concern for the development of professional personnel in educational research.

3.1 Characteristics that may relatively insure research activities by doctoral recipients in education during the first year following the receipt of the degree.

Based on the results of the study of the 1964 doctoral recipients, the following characteristics may be considered relatively important for future models for research training.

3.11 an institutional setting that emphasizes graduate preparation for research, has a closed level of admission to the graduate program*, and has a high proportion of the graduate faculty doing research; and a program for training in research;

3.12 doctoral students who will be 32 or younger at the completion of the requirements for the doctoral program;

3.13 an exposure to and sustained involvement in such research courses as college mathematics (at least three courses);

3.14 the availability of funds for research scholarships or assistantships;

3.15 the involvement in interdisciplinary research through participation in interdepartmental research projects outside the graduate institution of education;

3.16 the provision of at least two types of opportunities to obtain research experiences during the doctoral program (a combination of at least two of the following types of opportunities: (1) research assistant to a professor; (2) research assistant in a research organization; (3) and a general type of research experience termed "other");

3.17 the experience of publishing research reports; and

3.18 the requirement that doctoral students have at least 18 months of continuous full-time residence in the graduate institution

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*The reader is referred to pages 87-88 for a discussion of the operational definition of this organizational variable.

3.2 Implications for recruitment procedures.

Although there are many, only two implications for recruitment procedures are presented.

Evidence shows that only a relatively few of the 1964 doctoral recipients had considered of highest importance in their selection of the graduate institution the research opportunities provided by that institution from which the doctorate was received. Therefore, there is a need for recruitment procedures to stress the relative importance of a career in educational research -- to indicate that educational research is an an academic pursuit. Furthermore, there is a need for recruitment procedures to increase on the part of the future graduate student in education the awareness of the research opportunities provided by the graduate institution of education and the university.

Evidence shows that individuals who spent at least six years in teaching or other school experience are not potential recruits for research. However, recruitment procedures for potential trainees in research should not exclude consideration of individuals who have spent between one and five years in this activity because they have relatively greater likelihood of entering research than do those who have six years or more in teaching or other school experience.

3.3 An emphasis and a concern for the development of professional personnel in educational research.

Evidence shows for most of the favorable characteristics for research development that doctoral recipients awarded the Ph.D. tend slightly more to undertake research activities during the first year following the receipt of the doctorate. However, for a few of the favorable characteristics there occurs on the patterns for research activity almost negligible differentiation between the two types of doctoral recipients. For example, relatively small differentiation occurs for the two types of doctoral recipients who upon entering graduate school had the orginal objective of a doctoral degree in another department but later changed to one in education or who received their doctoral degree from a graduate institution of education that emphasized the graduate preparation for research or who participated in research projects in a department outside the school of education. In light of these findings, the development of professional personnel in research should perhaps have less concentration on the differentiation between the two types of doctoral degrees administered in education and more concentration on the differentiation of the types of models for research training.

Analyses of some data lend support for the concern that perhaps relatively few of the doctoral students may, in fact, visualize educational research as an academic pursuit. A few examples are given to illustrate the point. According to the analysis of the catalogues of graduate institutions of education, relatively few of the institutions had research courses exclusively given in a department entitled with a research-name. According to the institutional survey of deans of graduate institutions of education, relatively few stated that research (alone or plus others) was the type of graduate preparation receiving the greatest emphasis. Furthermore, almost half of the graduate institutions neither emphasized graduate preparation for research nor provided a program for training in research. According to the level of agreement by the recent doctoral recipients in education concerning the place where they took courses that taught the methods they now use in doing research, proportionately more of those who stated the courses were taken outside the school of education tend to undertake the patterns for research activities during the first year following the receipt of the degree.

However, if educational research is, in fact, an academic pursuit, it seems relevant that the concern for the development of professional personnel in educational research belongs to the academic community as a whole -- not exclusively to the graduate institutions of education or a few graduate departments with related research interests that are outside the graduate institution of education. The concern of the academic community is to recruit potential trainees in research and to provide the optimum opportunities for students to obtain research experiences.

Purpose III: To offer recommendations that may be considered relevant for preparation for research in education.

The following four recommendations cover the areas of programs for the preparation of researchers, organizational arrangements for training in research, some characteristics of potential trainees in research, and considerations for future research studies.

Recommendation 1. Future models for the preparation of researchers should provide programs that have a complementary function between training received through lectures and instruction in academic subjects and training received through apprenticeships on research projects.

Before establishing requirements of what courses the potential trainee is to take, the courses necessary for acquiring the basic skills relevant to a particular specialty of research should be identified. Before establishing requirements for apprenticeships on research projects, identifying the types of research experiences necessary for acquiring the basic "routines, skills, and sensitivities" relevant to a particular specialty of research should be done.

In general, the setting for which training is received through lectures and instruction in academic subjects should include, among others, courses for research methods germane to the doctoral student's area of research interests and courses for analytical review of past and present research studies published in the area or related areas.

In general, the setting for which training is received through apprenticeships on research projects should include some of the following opportunities: (a) where possible, work with interdepartmental research projects outside the graduate institution of education; (b) where possible, at least two rather distinct types of research experiences (for example, a research assistant to a professor and a research assistant in a research organization); (c) field experiences in the particular institutional setting the doctoral student's research specialty represents (for example, school systems); (d) participation in systematic apprenticeship programs (special programs for training in research); (e) participation in departmental and interdepartmental seminars conducted primarily by faculty who are conducting research projects related to the student's research specialty; and (f) experiences in research analysis and writing by preparing research proposals and papers --

which should be presented and analyzed in special seminars and, if deemed relevant, should be delivered at professional meetings and perhaps published.

Recommendation 2. Future models for the preparation of researchers may represent a variety of organizational structures either in the graduate institution of education or within the total academic community. Such organizational arrangements may include a department of educational research in graduate institutions of education, an interdisciplinary committee for educational research, research organizations, regional centers for training in research, and interinstitutional arrangements for training in research. Available resources, both human and monetary, may determine the type(s) and the size of the organizational structure(s) that a particular graduate institution of education or a university represents. Important for any of the organizational arrangements are some of the following characteristics: (a) a staff who are actively involved in research projects and committed to the preparation of researchers; (b) a special program for training in educational research; (c) one or more individuals who assume the responsibilities of coordinating the range of opportunities for doctoral students to obtain research experiences; (d) a volume of research activity and student participation that does not preclude effectively individualizing and integrating the research experiences provided the students; and (e) available funds for the staff, the special program for training in research, the trainees in research, the research projects undertaken, and other items deemed necessary.

Recommendation 3. Characteristics that should be considered relatively important in the recruitment of potential trainees in educational research are ones that indicate that the individual will be about 32 or younger at the completion of the doctoral program, is highly motivated to pursue doctoral work by remaining (at least) three years in continuous full-time residence in the graduate institution, has had no more than five years in teaching or other school experience, has had a strong liberal arts background, and reflects both an intellectual and a psychological ability to pursue a career in which the major portion of his professional time is devoted to research. The availability of funds for research scholarships (or assistantships) serves to influence as well as to sustain the potential trainee in participating in a program for training in research.

Some recommended procedures for recruiting the potential trainee in educational research may be of the following order.

a. Early identification of individuals in the undergraduate program who may express or be encouraged to have interests in research is very important. Recruitment should not necessarily be limited to students who are representing the departments of the liberal arts and sciences. If the students are in departments of education, they should be encouraged to obtain a strong liberal arts background -- especially to take courses in research techniques and problems.

If these individuals are selected later as trainees in research and attend a graduate institution of education that has at least one formal entrance requirement for admission to the graduate program (such as a teaching certificate or professional experience), the institution should waive such requirements for these students.

b. There may be some individuals who, having recently completed their undergraduate program, are teaching or working in school systems. If some of these individuals can be identified early enough as having or being encouraged to have interests and abilities in research, they should be considered as potential recruits for educational research. If there be evidence of their not having a sufficient background in research methodology, they should be encouraged and directed to take the steps to obtain the necessary requirements.

c. Some of the organizational arrangements discussed in the second recommendation may consider the relevancy of providing through the regular academic year seminars on educational research which potential recruits may attend and of providing summer institutes in which these same individuals may become involved in some of the research projects and programs.

No matter what local disctinction or requirements exist concerning the type of doctorate administered in education and no matter what organizational body controls or administers the doctoral degree(s) in ducation, the major concern for the development of professional personnel in educational research is that optimum opportunities are provided by the university for trainees in educational research to meet the specified requirements of a competently prepared researcher.

Recommendation 4. Although the results from this study elicited many issues for future research studies, three will be presented.

a. Recruitment procedures for potential trainees in educational research may be facilitated, if studies are undertaken to discern the actual range of all opportunities that exist now and are being planned for people who do desire and become prepared for careers in educational research.

b. Concern for the types of models for research training should not be limited necessarily to those who desire careers in educational research. Models should be developed that reflect the type, the extent, and the degree of training in research needed to meet the requirements of competently prepared professional personnel whose major proportion of professional time will not be devoted to research. Studies that systematically asses these inquiries, also, have implications for facilitating recruitment procedures for potential trainees in educational research as well as for potential trainees in other professional endeavors in education.

c. In order to have early identification of potential trainees in educational research, systematic studies are needed to discern and develop ways of identifying the intellectual and the psychological abilities relevant to a career in educational research.

Furthermore, systematic investigation is necessary for perceiving and creating organizational structures that sustain these abilities and motivations for a career in educational research.

In other words, training in educational research may be considered a continuous and an evolutionary process. Future models for preparation for research should consider relevant ways and means of developing not only patterns for potential commitment to research by recent doctoral recipients but also patterns for sustained commitment to research. Systematic analyses are needed to measure the type, the degree, the time, and the extent of continued training in research after the receipt of the doctoral degree. Studies that reflect institutional structures that sustain educational research productivity during an individual's career in a particular institutional setting may permit more effective use and understanding of human and monetary resources needed for educational research.

BIBLIOGRAPHY

1. American Council on Education. Educational Research: Its Nature, Essential Conditions, and Controlling Concepts. Studies, Series I, Vol. 3, No. 10. Washington, D.C.: The American Council on Education, 1939.

2. Andrews, Frank M. "Scientific Performance as Related to Time Spent on Technical Work, Teaching, or Administration," in Administrative Science Quarterly, Vol. 9, No. 2 (September 1964), pp. 182-193.

3. Andrews, John H. M. "Differentiated Research Training for Students of Administration," in Educational Research: New Perspectives, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 355-365.

4. Atkins, Al, et al. "Report of the Graduate Faculties Student Council on a Survey of Graduate Student Views." New York: Columbia University, May 1963. (Mimeographed)

5. Bantock, G. H. "Educational Research: A Criticism," in Harvard Educational Review, Vol. 31, No. 3 (Summer 1961), pp. 264-280.

6. Barton, Allen H. with an introduction by Paul F. Lazarsfeld. Organizational Measurement and Its Bearing on the Study of College Environments. New York: College Entrance Examination Board, 1961.

7. Barton, Allen H. and David E. Wilder. "Research and Practice in the Teaching of Reading: A Progress Report." New York: Columbia University, Bureau of Applied Social Research, No. A-388, pp. 361-398.

8. Bargar, Robert R. "Who is the Educational Researcher?" in The Training and Nurture of Educational Researchers edited by Egon Guba and Stanley Elam. Bloomington, Indiana: Phi Delta Kappa, Inc., 1965, pp. 13-47.

9. Becker, Howard S., Blanche Geer, Everett C. Hughes, and Anselm L. Strauss. Boys in White: Student Culture in Medical School. Chicago: The University of Chicago Press, 1961.

10. Bereiter, Carl. "Issues and Dilemmas in Developing Training Programs for Educational Researchers," in Sixth Annual Phi Delta Kappa Symposium on Educational Research: The Training and Nurture of Educational Researchers, edited by Egon Guba and Stanley Elam. Bloomington, Inc.: Phi Delta Kappa, Inc., 1965, pp. 95-110.

11. Berelson, Bernard. Graduate Education in the United States. New York: McGraw-Hill, 1960.

12. Berelson, Bernard. "Postdoctoral Work in American Universities" in Journal of Higher Education, Vol. XXXIII, No. 3 (March 1962), pp. 119-130.

13. Blau, Peter M. and W. Richard Scott. Formal Organizations: A Comparative Approach. San Francisco: Chandler Publishing Company, 1962, pp. 312.

14. Blessing, James H. Graduate Education: An Annotated Bibliography. Washington, D.C.: U.S. Dept. of Health, Education, and Welfare, Office of Education, 1961.

15. Bolt, Richard H., Walter L. Koltun, and Oscar H. Levine. "Doctoral Feedback into Higher Education: An analytical model can guide the development of policies and programs," in Science, Vol. 148, No. 3672 (May 14, 1965), pp. 918-928.

16. Bressler, Marvin. "The Conventional Wisdom of Education and Sociology," in Sociology and Contemporary Education, edited by Charles H. Page. New York: Random House, 1964, pp. 76-114.

17. Brim, Orville G., Jr. Sociology and the Field of Education. New York: Russell Sage Foundation, 1958 (esp. pp. 72-78).

18. Brown, Laurence D. Doctoral Graduate in Education: An Inquiry into Their Motives, Aspirations, and Perceptions of the Program. Cooperative Research Project No. S240. Bloomington, Indiana: Indiana University Foundation, 1966. (Mimeographed)

19. Brown, Laurence D. and J. Marlowe Slater. "Volume I: The Graduates" in The Doctorate in Education: An Inquiry into Conditions Affecting Pursuit of the Doctoral Degree in the Field of Education. Washington, D.C.: The American Association of Colleges for Teacher Education, 1960.

20. Brown, Leiba. Educational Research and the Liberal Arts. Cooperative Research Project No. S-087. New York: Columbia University, Bureau of Applied Social Research, May 1966. (Mimeographed)

21. Brownell, William A. "Educational Research in the Decade Ahead," in California Journal of Educational Research, Vol. XIV, No. 2 (March 1963), pp. 51-66.

22. Buswell, Guy T. "Research Training in Doctoral Programs in Education." Talk given at the annual convention of the American Educational Research Association in Atlantic City, New Jersey, February 20, 1962. (Mimeographed)

23. Buswell, Guy T., T. R. McConnell, Ann M. Heiss, and Dorothy M. Knoll. Training for Educational Research. Cooperative Research Project No. 51074. Berkeley, California: University of California, Center for the Study of Higher Education, 1966. (Multilithed)

24. Campbell, R. F. "Training Research Professors of Educational Administration," in Educational Research: New Perspectives, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 341-354.

25. Campbell, R. F. and R. A. Bunnel. "Research: What It Really Is and How to Use It in Your District," in Educational Digest, Vol. 28 (March 1963), pp. 25-27.

26. Caplow, Theodore and Reece J. McGee. The Academic Market-place. New York: Basic Books, Inc., 1958 (esp. pp. 219-238).

27. Carter, Allen M. "Economics of the University," in The American Economic Review, LV: 2 (1965), pp. 481-494.

28. Clark, David L. "What's Next for Research in Education?" in Theory into Practice, Vol. 1, No. 2 (April 1962), pp. 61-63.

29. Clark, David L. "Educational Research: A National Perspective" in Educational Research: New Perspectives, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 7-18.

30. Clark, Kenneth E. America's Psychologists: A Survey of a Growing Profession. Washington, D.C.: American Psychological Association, Inc., 1957.

31. Clausen, John A. "Research Development: A Problem in Leadership" in Educational Research: New Perspectives edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 49-57.

32. Clymer, Theodore. "Some Current Needs in Educational Research," in Phi Delta Kappan, Vol. 40 (March 1959), pp. 253-257.

33. Conrad, Herbert S. "Contributions of the Federal Government to Educational Research Methodology" in First Annual Phi Delta Kappa Symposium on Educational Research, edited by Frank W. Banghart. Bloomington, Ind.: Phi Delta Kappa, Inc., 1960, pp. 23-41.

34. Cooley, William W. "Attributes of Potential Scientists," in Harvard Educational Review, Vol. 28 (Winter 1958), pp. 1-18.

35. Cooley, William W. "Research Methodology and Modern Data Processing," in Harvard Educational Review, Vol. 31, No. 3 (Summer 1961), pp. 257-263.

36. Cooper, Dan. "The Impact of Research on Education," in Phi Delta Kappan, Vol. 35 (October 1953), pp. 16-20.

37. Evans, Rupert. "Staff Attitudes towards Research," in Administration of Educational Research (November 1960), pp. 75-80.

38. Ewing, John C., and W. Hugh Stickler. "Progress in the Development of Higher Education as a Field of Professional Graduate Study and Research," in Journal of Teacher Education, Vol. 15 (December 1964), pp. 397-403.

39. Fattu, Nicholas A. "A Survey of Educational Research at Selected Universities" in First Annual Phi Delta Kappa Symposium on Educational Research, edited by Frank W. Banghart. Bloomington, Ind.: Phi Delta Kappa, Inc., 1950, pp. 1-21.

40. Ferriss, Abbott L. "Educational Interrelations Among Social Sciences," in The American Sociologist, Vol. 1, No. 1 (November 1965), pp. 15-23.

41. Findley, Warren G. "The Impact of Applied Problems on Educational Research" in First Annual Phi Delta Kappa Symposium on Educational Research edited by Frank W. Banghart. Bloomington, Ind.: Phi Delta Kappa, Inc., 1960, pp. 43-53.

42. Flanagan, J. C. "Data Processing in Large-Scale Research Projects," in Harvard Educational Review, Vol. 31, No. 3 (Summer 1961), pp. 257-263.

43. Freeman, Frank N. "Means and Ends in the Scientific Study of Education" in The Fiftieth Yearbook of the National Society for the Study of Education, Part I: Graduate Study in Education. Chicago: University of Chicago Press, 1951, pp. 42-51.

44. Gage, N. L. "An Undergraduate Curriculum in Educational Research." Paper presented at the meetings of the American Educational Research Association, Atlantic City, New Jersey, February 20, 1962. 8 pp.

45. Gage, N. L. "New Directions in Educational Research." Paper presented at the Third Annual Convocation for Educational Research, sponsored by the New York State Education Department and the Educational Research Association of New York State, October 25-26, 1962, at the State University College of Education, Albany, New York, in conjunction with the Regents Convocation.

46. Gardner, Eric F. Tomorrow's Graduate School of Education. Syracuse, New York: Syracuse University Press, 1958.

47. Gates, Arthur I. "Science or Sanity? in Phi Delta Kappan, Vol. 45, No. 6 (March 1964), pp. 297-302.

48. Gilbert, Harry B. "Observations on the Selection of Research Personnel in the New York City Public Schools." Speech given at the annual convention of the American Educational Research Association in Atlantic City, New Jersey, February 20, 1962. (Typed)

49. Good, Carter V. "Methods of Research," in *School and Society* (October 8, 1960), p. 364.

50. Good, Carter V. "Educational Research after Fifty Years," in *Phi Delta Kappan*, Vol. 37 (January 1956), pp. 145-152.

51. Goode, William J. "Community Within a Community: The Professions," in *American Sociological Review*, Vol. 22 (April 1957), pp. 194-204.

52. Gottlieb, David. "Processes of Socialization in the American Graduate Schools," in *Social Forces*, Vol. 40 (December 1961), pp. 124-131.

53. Gottlieb, David. "Processes of Socialization in the American Graduate School." Unpublished Ph.D. dissertation, Department of Sociology, University of Chicago, 1960.

54. Griffiths, Daniel E. *Research in Educational Administration: An Appraisal and a Plan.* New York: Teachers College, Columbia University, Bureau of Publications, 1959.

55. Griffiths, Daniel E. "Some Assumptions Underlying the Use of Models in Research," in *Educational Research: New Perspectives*, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 121-140.

56. Gross, Neal. "Some Contributions of Sociology to the Field of Education," in *Harvard Educational Review*, Vol. 29 (Fall 1959), pp. 275-287.

57. Guba, Egon. "Research in the University," in *Administration of Educational Research* (November 1960), pp. 1-8.

58. Guba, Egon G. "Guides for the Writing of Proposals" in *Educational Research: New Perspectives*, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 289-305.

59. Guba, Egon and Stanley, Elam, editors. *The Training and Nurture of Educational Researchers.* *Sixth Annual Phi Delta Kappan Symposium on Educational Research.* Bloomington, Indiana: Phi Delta Kappa, Inc., 1965.

60. Gustad, John W. "They March to a Different Drummer: Another Look at College Teachers," in *The Educational Record*, Vol. 40 (July 1959), pp. 204-211.

61. Hall, Roy M. "Research Needed in Education," in *School Life*. Vol. 42 (March 1960), pp. 6-8.

62. Halpin, Andrew W. "A Rationale for Training Research Workers," in *Educational Research: New Perspectives*, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 311-324.

63. Heiss, Ann M. "Berkeley Doctoral Students Appraise Their Academic Programs." Berkeley, California: University of California, Center for the Study of Higher Education, April 1964. (Mimeographed)

64. Heist, Paul. "The Student" in *Education for the Professions: The Sixty-first Yearbook on the National Society for the Study of Education: Part II*, edited by Nelson B. Henry. Chicago, Ill.: University of Chicago Press, 1962, pp. 211-234.

65. Herrick, Virgil E. "Guides for Facilitating Research in Universities" in *Educational Research: New Perspectives*, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 59-85.

66. Hirsch, P. "How to Make Research Worthwhile," in *School Management*, Vol. 5 (November 1961), pp. 63-64.

67. Hughes, Everett C. "Professions" in *The Professions in America*, edited by Kenneth S. Lynn and the editors of *Daedalus*. Boston: Houghton Mifflin Company, 1965, pp. 1-14.

68. Jensen, Arthur R. "The Improvement of Educational Research," in *Teachers College Record*, Vol. 64, No. 1 (October 1962), pp. 20-27.

69. Kendall, Patricia. "Impact of Training Programs on the Young Physician's Attitudes and Experiences," in *The Journal of the American Medical Association*, Vol. 176 (June 24, 1961), pp. 992-997.

70. Keniston, Hayward. Appendix, "Standing of American Graduate Departments in the Arts and Sciences," in *Graduate Study and Research in the Arts and Sciences at the University of Pennsylvania*. Philadelphia: University of Pennsylvania Press, 1959.

71. Keppel, Francis. "Research: Education's Neglected Hope," in *Journal of Reading*, Vol. 8 (October 1964), pp. 3-9.

72. Kerlinger, Fred N. "The Mythology of Educational Research: The Methods Approach," in *School and Society*, Vol. 88 (March 26, 1960), pp. 149-151.

73. Kerlinger, Fred N. "The Ed.D. and the Ph.D.," in *Teachers College Record* (February 1965), pp. 434-439.

74. Knapp, Robert H. and H. B. Goodrich. Origins of American Scientists. Chicago: University of Chicago Press, 1952.

75. Knapp, Robert H. and Linda A. Ehlinger. "A Factor Analysis of Fields of Scholarly Production," in The Journal of Educational Research, Vol. 56, No. 9 (May-June 1963), pp. 484-487.

76. Krathwohl, David R. "The Scope of the Research Problem," in Theory into Practice, Vol. 1, No. 2 (April 1962), pp. 98-104.

77. Krathwohl, David R. "Current Formal Patterns of Educating Empirically Oriented Researchers and Methodologists" in The Training and Nurture of Educational Researchers. Sixth Annual Phi Delta Kappan Symposium on Educational Research, edited by Egon Guba and Stanley Elam. Bloomington, Ind.: Phi Delta Kappa, Inc., 1965, pp. 73-93.

78. Lazarsfeld, Paul F. "Progress Report: on a Project to Map Out the General Area of Non-Intellectual Factors in the Prediction of College Success." New York: Columbia University, Bureau of Applied Social Research, May 1959, 51 pp. (Typed)

79. Lazarsfeld, Paul F. "Some Problems of Organized Social Research" in The Behavioral Sciences: Problems and Prospects, edited by O. G. Simmons. Boulder, Colorado: University of Colorado, Institute of Behavioral Science (August 1964), pp. 7-19.

80. Lazarsfeld, Paul F. and Sam D. Sieber. Organizing Educational Research. Englewood Cliffs, N.J.: Prentice-Hall, Inc. 1964.

81. Lazarsfeld, Paul F. with collaboration of Sidney S. Spivack. "Observations on the Organization of Empirical Social Research in the United States," in Information, No. XXIX (December 1961), pp. 3-27 (esp. pp. 22-28).

82. Lortie, Dan C. "Laymen to Lawmen: Law School, Careers, and Professional Socialization," in Harvard Educational Review, Vol. 29, No. 4 (Fall 1959), pp. 352-369.

83. Lucow, William H., and Kenneth E. Anderson. "The Methodology of Educational Research in Science and Mathematics," Review of Educational Research, Vol. 31, No. 3 (June 1961), pp. 331-340.

84. Ludlow, H. Glenn, John A. Sanderson, and Richard C. Pugh. "Volume IV: Follow-up Study" in The Doctorate in Education: A Further Investigation of Persons Receiving the Doctorate in the Field of Education in the United States for the Year 1958: Their Abilities, Professional Motivations and Job Satisfactions. Washington, D.C.: The American Association of Colleges for Teacher Education, 1964.

85. MacArthur, R. S. "Organization for Educational Research in Universities of Midwestern United States," in Alberta Journal of Educational Research, Vol. 4 (September 1958), pp. 131-141.

86. McConnell, T. R. "Organization within the University of Graduate Work in Education," in The Fiftieth Yearbook of the National Society for the Study of Education, Part I: Graduate Study in Education. Chicago: University of Chicago Press, 1951, pp. 22-29.

87. McGolthlin, William J. Patterns of Professional Education: A Comparative Study of Ten Fields. New York: G. P. Putnam's Sons, 1960.

88. Merton, Robert K. Social Theory and Social Structure. Glencoe, Ill.: The Free Press, 1957, esp. Chapter IX: "Continuities in the Theory of Reference Groups and Social Structure," pp. 281-386.

89. Merton, R. K., G. E. Reader, and Patricia L. Kendall. The Student-Physician. Cambridge, Mass.: Harvard University Press, 1957.

90. Millikan, Nancy H. "Production of Researchers by Graduate Schools of Education: Progress Report," in The Development of Professional Personnel in Educational Research. New York: Teachers College, Columbia University and Bureau of Applied Social Research, Columbia University, September 1966. (Mimeographed)

91. Monroe, Walter S. "A Survey of the Requirements for the Doctor of Philosophy in Education," in School and Society, Vol. 31, No. 803. (May 17, 1930), pp. 655-661.

92. Mooney, Ross L. "Problems in the Development of Research Men," in Educational Research Bulletin, Vol. 30 (1951), pp. 141-150.

93. Mooney, Ross L. "Evaluating Graduate Education" in Harvard Educational Review, Vol. 25, No. 2 (Spring 1955), pp. 85-94.

94. Mooney, Ross L. "Training for Research in Educational Administration: A Rationale" in Educational Research: New Perspectives, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 325-340.

95. Mooney, Ross L. "Nurturing the Educational Researcher as a Creative Artist" in The Training and Nurture of Educational Researchers. Sixth Annual Phi Delta Kappa Symposium on Educational Research, edited by Egon Guba and Stanley Elam. Bloomington, Ind.: Phi Delta Kappa, Inc., 1965, pp. 224-253.

96. Moore, Harold E., John H. Russel, and Donald G. Ferguson. "Volume II: The Institutions" in The Doctorate in Education: An Inquiry into Conditions Affecting Pursuit of the Doctoral Degree in the Field of Education. Washington, D.C.: The American Association of Colleges for Teacher Education, 1960.

97. Morrison, J. Cayce. "The National Education Association and Educational Research," in *Review of Educational Research*, Vol. 26, No. 3 (June 1956), pp. 205-209.

98. Nagel, Ernest. "Philosophy in Educational Research" in *First Annual Phi Delta Kappa Symposium in Educational Research*, edited by Frank W. Banghart. Bloomington, Ind.: Phi Delta Kappa, Inc., 1960, pp. 71-84.

99. Nyquist, Ewald B. "We Must Disenthrall Ourselves." Keynote address of the 1962 Research Conference sponsored jointly by the Educational Research Association of New York State and the New York State Education Department. Theme of conference was *New Directions in Organizing for Educational Research*. (Mimeographed)

100. Pelz, Donald C. "Some Social Factors Related to Performance in a Research Organization," in *School Science and Mathematics*, Vol. 58, Whole No. 512 (June 1958), pp. 417-429.

101. Phillips, B. N. "Survey of Research Personnel, Facilities, and Activities in State Departments of Education," in *Journal of Educational Research*, Vol. 51 (September 1957), pp. 43-45.

102. Pins, Arnulf M. *Who Chooses Social Work, When and Why?: An Exploratory Study of Factors Influencing Career Choices in Social Work*. New York: Council on Social Work Education, Inc., 1963.

103. Reller, Theodore. "A Survey of the Requirements for the Degree of Doctor of Education," in *School and Society*, Vol. 39 (April 21, 1954), pp. 516-520.

104. Rioux, J. William. "A New Dimension in the Improvement of Education: Financial Support of Teacher Research," in *National Association of Secondary-School Principals*, Vol. 46 (December 1962), pp. 18-22.

105. Robinson, F. G. "Deficiencies in Our Present Organization for Educational Research and Suggestions for Improvement," in *Canadian Education and Research Digest*, Vol. 2 (December 1962), pp. 243-251.

106. Roe, Anne. *The Making of a Scientist*. New York: Dodd Mead, 1953.

107. Roe, Anne, and associates, editors. *Graduate Education in Psychology*. Washington, D.C.: American Psychological Association, 1959.

108. Rogers, Candace. "Some Observations on the Bureau of Applied Social Research and the Graduate Student Career" in *The Graduate Sociological Society of Columbia University*, Vol. 2, No. 3 (May 1963), pp. 33-39. (Mimeographed)

109. Ryans, David. "The Preparation of Educational Research Workers," in *Journal of Educational Research*, Vol. 49 (November 1955), pp. 195-202.

110. Ryans, David G. "Are Educational Research Offices Conducting Research?" in *Journal of Educational Research*, Vol. 51 (November 1957), pp. 173-183.

111. Ryans, David G. "Advantages of the Private Research Facility and the Cooperative University-Private Facility Environments for the Conduct of Educational Research." Paper presented at American Educational Research Association symposium on "The Appropriate Setting for Educational Research," Chicago, Illinois, February 15, 1963.

112. Ryans, David G. "Looking to the Future in Education," in *Educational Record* (October 1963), pp. 360-368.

113. Scates, Douglas E. "The Nature and Need of Educational Research," in *Science*, Vol. 103, No. 2683 (May 1946), pp. 657-661.

114. Scates, Douglas E. "In Behalf of Educational Research," in *Phi Delta Kappan*, Vol. 28 (May 1947), pp. 365-369.

115. Selvin, Hanan C. "The Teaching of Methodology." Paper prepared for the International Round Table on the Teaching of Sociology in Universities and Institutions of Higher Education, September 9-13, 1962. (Mimeographed)

116. Shepherd, Clovis and Paula Brown. "Status, Prestige, and Esteem in a Research Organization," in *Administrative Science Quarterly*, Vol. 1 (December 1956), pp. 340-360.

117. Sibley, Elbridge. "The Recruitment, Selection, and Training of Social Scientists." Bulletin No. 58. New York: Social Science Research Council, 1948.

118. Sibley, Elbridge. *The Education of Sociologists in the United States*. New York: Russell Sage Foundation, 1963.

119. Sieber, Sam D. and Paul F. Lazarsfeld. *The Organization of Educational Research*. Cooperative Research Project No. 1974. New York: Columbia University, Bureau of Applied Social Research, 1966. (Multilithed)

120. Sieber, Sam D., Nancy H. Millikan and David Wilder. "Project Memorandum No. 3: Course Offerings in Educational Research - An Examination of Catalogues of Schools of Education and of The Training of Doctoral Recipients," *The Organization of Educational Research* by Paul F. Lazarsfeld and Sam D. Sieber. Bureau of Applied Social Research, Columbia University. October, 1964. (Mimeographed)

121. Sieber, Sam D. and Nancy H. Millikan. "Project Memorandum No. 3: The Training for Careers in Educational Research: A Study of Institutional Inputs," *The Organization of Educational Research* by Paul F. Lazarsfeld and Sam D. Sieber. Bureau of Applied Social Research, Columbia University. January, 1966. (Mimeographed)

122. Smith, Gerald R. "A Critique of Proposals Submitted to the Cooperative Research Program" in *Educational Research: New Perspectives*, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 277-287.

123. Stanley, Julian C. "Doctoral Students and Research in Educational Psychology," in *School and Society*, Vol. 90, No. 3 (1962), pp. 375-377.

124. Stanley, Julian C. "A Paradigm for Classroom Experimentation" in *American Psychologist*, Vol. 19, No. 1 (1964), pp. 64-65.

125. Stecklein, John E. and Ruth E. Eckert. *An Exploratory Study of Factors Influencing the Choice of College Teaching as a Career.* Cooperative Research Project. Minneapolis, Minn.: University of Minnesota, Bureau of Institutional Research, January 1958.

126. Stiles, Lindley J. "The Cooperative Research Program: Contributions and Next Steps," in *Phi Delta Kappan*, Vol. 43 (March 1962), pp. 231-236.

127. Stogdill, Ralph M. "Role Perception and Fulfillment in Research" in *Educational Research: New Perspectives*, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 93-99.

128. Straubel, James H. "No Room for Stuffed Birds," in *Theory into Practice*, Vol. 1, No. 2 (April 1962), pp. 64-69.

129. Strauss, Samuel, and Henry Brechbill. "Traits of Scientists," in *Science Education*, Vol. 43 (1959), pp. 35-41.

130. Strauss, Samuel. "On Research Ability in Graduate Students: The Report of a Study Based on Interviews," in *Journal of Higher Education*, Vol. 32 (1961), pp. 443-448.

131. Strauss, Samuel. "On the Backgrounds of Doctorates," in *Science Education*, Vol. 49, No. 1 (February 1965), pp. 5-36.

132. Strauss, Samuel. "On the Doctorate in Education," in *The Journal of Teacher Education*, Vol. 16, No. 1 (March 1965), pp. 46-53.

133. Symonds, Percival M. "The Organization of Educational Research in the United States," in Harvard Educational Review, Vol. 27, No. 3 (Summer 1957), pp. 159-167.

134. Taylor, C. W., Brewster Ghiselin, and John A. Wolfer. "Bridging the Gap between Research and Teaching," in National Education Association Journal, Vol. 51 (January 1962), pp. 23-25.

135. Taylor, Donald W., Chairman, and Members of the Seminar. "Education for Research in Psychology," in American Psychologist, Vol. 14 (April 1959), pp. 167-179.

136. Thielens, Wagner, Jr. "Some Comparisons of Entrants to Medical and Law School" in The Student-Physician, edited by R. K. Merton, G. E. Reader, and Patricia L. Kendall. Cambridge, Mass.: Harvard University Press, 1957, pp. 131-152.

137. Thomasson, Peggy, and Julian C. Stanley. "Exploratory Study of Productivity and 'Creativity' of Prominent Psychometricians." Madison, Wisconson: University of Wisconsin. (Mimeographed)

138. Thompson, John W. "Method-Ideology and Educational Iedologies," Educational Theory, Vol. 12 (April 1962), pp. 110-164.

139. Trow, Martin. "Survey Research in Educational Research" in Educational Research: New Perspectives, edited by Jack A. Culbertson and Stephen P. Hencley. Danville, Ill.: The Interstate Printers & Publishers, Inc., 1963, pp. 249-263.

140. Trow, Martin. "Recruitment to College Teaching" in Education, Economy, and Society: A Reader in the Sociology of Education, edited by A. H. Halsey, Jean Floud, and C. Arnold Anderson. Glencoe, Ill.: The Free Press, 1963, pp. 602-620.

141. Tyler, Ralph W. "The Functions of Graduate Departments and Schools of Education" in The Fiftieth Yearbook of the National Society for the Study of Education, Part I: Graduate Study in Education. Chicago: University of Chicago Press, 1951, pp. 10-21.

142. Tyler, Ralph W. "The Contribution of the Behavioral Sciences to Educational Research" in First Annual Phi Delta Kappa Symposium on Educational Research, edited by Frank W. Banghart. Bloomington, Ind.: Phi Delta Kappa, Inc., 1960, pp. 55-70.

143. Tyler, Ralph. "Specific Contributions of Research to Education," in Theory into Practice, Vol. 1, No. 2 (April 1962), pp. 75-80.

144. Ulich, Robert. "On the Reform of Educational Research," Occasional Pamphlet, No. 2, Graduate School of Education, Harvard University, 1938.

145. Walker, Helen M. and Joseph Lev. *Statistical Inference*. New York: Holt, Rinehart and Winston, 1953, pp. 436-438.

146. Walker, Helen M. "Methods in Research," in *Review of Educational Research*, Vol. 26, No. 3 (June 1956), pp. 323-344.

147. Walker, Helen. "The Preparation of Research Workers in Education," in *The Elementary School Journal*, Vol. 58 (October 1957), pp. 9-15.

148. Weitz, Henry. "A Survey of Student Personnel and Educational Research Facilities" in *American Psychologist*, Vol. 12 (October 1957), pp. 654-658.

149. Wilder, David E. "The Reading Experts: A Case Study of the Failure to Institutionalize an Applied Science of Education." Unpublished Ph.D. dissertation, Department of Sociology, Columbia University, 1966.

150. Wright, Charles R. "Training for Social Science Research: An Exploratory Study by the Planning Project for Advanced Training in Social Research." An unpublished study, Bureau of Applied Social Research, Columbia University, 1956. (Mimeographed)

151. Wright, Charles R. "Success or Failure in Earning Graduate Degrees," in *Sociology of Education*, Vol. 38, No. 1 (Fall 1964), pp. 73-97.

152. Woodward, R. H. "College-supported Faculty Research Programs," in *School and Society*, Vol. 91 (March 9, 1963), pp. 110+.

153. Yauch, Wilbur A., Editor. "Volume III: Conference Report" in *The Doctorate in Education: An Inquiry into Conditions Affecting the Pursuit of the Doctoral Degree in the Field of Education*. Washington, D.C.: The American Association of Colleges for Teacher Education, 1961.

154. Young, Raymond J. "Educational Research in Colleges and Universities," in *Journal of Higher Education*, Vol. 29 (June 1958), pp. 331-335.

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APPENDIX A

CONTENT ANALYSIS OF CATALOGUES OF THE GRADUATE INSTITUTIONS OF EDUCATION AND SELECTED MARGINALS OF HISTORICAL DATA FOR THE GRADUATE INSTITUTIONS OF EDUCATION

Provisions for training in research have usually been concerned with two general areas of preparation; namely, preparation for research through academic courses provided by the graduate institution and through apprenticeships on research projects being conducted in the institution. The purpose of the analysis of the 1963-1965 catalogues of graduate institutions of education that administer the doctoral degree in education was two-fold. First, the extent to which institutions were providing opportunities for learning the basic procedures of research might be discerned by a systematic assessment of the research courses offered by the institutions. Second, since data concerning apprenticeships on research projects would be available from the institutional surveys, comparisons could be made for the development of researchers according to the two types of preparation for research.

The 1963-1965 catalogues of 111 graduate institutions that administer the doctorate in education* were examined. Five types of information were obtained: (1) the proportion of all graduate courses which dealt with research techniques and problems; (2) the proportion of all research courses that had research entrance requirements (research prerequisites or permission by the instructor); (3) the types of research courses; (4) the number of hours (semester) for which credit was given; and (5) the names and the number of divisions or departments within the graduate institution that offer these courses.

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*One institution was dropped during the final analysis of the data because no research courses were offered. At a later date, two of the remaining 110 institutions included in the analysis were determined not to administer the doctoral degree.

The following paragraphs briefly discuss the procedures for the analysis.

Since some catalogues did not give detailed descriptions of the courses, identification of research courses had to be determined by the title of the course. In such cases, a course was included only if the title clearly implied the objective of providing research training. Where catalogues provided detailed information for the courses, each statement was read to determine the extent of the course for providing procedures for doing research. If a course seemed partly devoted to this preparation, it was counted as one-half. Two types of errors might have occurred in the analysis; namely, an underestimation of the research courses offered by institutions with catalogues having less detailed information for the courses; and an overestimation of the number of research courses offered by institutions with more detailed descriptions in the catalogues.

Several types of graduate courses were excluded from the tabulation. All summer schools were omitted because of the special curricula that might be offered during the summer for teachers who return to the graduate institution. No courses that gave credit for practice teaching (or its comparable) were included. Excluded were all seminars as well as courses for which credit was given for the master's thesis or the doctoral dissertation.

Several types of courses were not to be designated "research courses." The following six types of courses were considered non-research: test construction for classroom achievement; test interpretation; individual testing, such as the Stanford-Binet (unless the description clearly specified for research purposes or analyses); survey of research findings, such as research on teaching; individual study (unless the description clearly specified for empirical research that needs to be done in the field);* and school surveys (unless the description clearly specified for potential contribution to general knowledge or to the training in research techniques, such as the use of systematic measures of school-quality).

There were six types of courses termed "research courses." They included: research methods and design; statistical methods; school surveys which contribute to research; a category termed "needed research"; and a general category termed "all others." Courses for needed research represented a type of research course because it seemed appropriate for those students who were planning to undertake their own research.

The procedure for counting the total number of graduate courses offered by the institution was as follows. Courses which were given more than once during the regular academic year were counted as often as they were offered. For example, if a course for which the hour-credit was three was offered both semesters, then the course was counted twice and the hour-credit was noted as six. (Quarter hours were converted to semester hours; a five-quarter hour was equivalent to a three-semester hour.)

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*If the research criterion was not met, then this type of course was excluded from the tabulation of courses.

Table 1.a presents the number of courses in the 110 graduate institutions that were examined according to the type of legal control of the institution and to the type of doctorate in education offered by the institution.

TABLE 1.a--Number of graduate courses included in the 1963-1965 catalogue study of 110 graduate institutions of education that grant the doctorate according to the type of legal control and type of doctorate in education offered by the institution.*

Type of Doctoral Degree Offered	Type of Legal Control		
	Public	Private	Total
Ph.D. only	1,986 (15)	621 (7)	2,607 (22)
Ed.D. only	1,850 (17)	1,414 (13)	3,264 (30)
Both the Ph.D. and the Ed.D.	6,221 (37)	4,867 (21)	11,088 (58)
TOTAL	10,057 (69)	6,902 (41)	16,959 (110)

*Numbers in parentheses represent the number of institutions in each category.

Table 1.b shows the number of research courses and credit-hours given for the courses.

TABLE 1.b--Number of graduate research courses and credit-hours for the courses examined in the 1963-1965 catalogue study of 110 graduate institutions of education that grant the doctorate according to the type of legal control and type of doctoral degree offered by the institution.*

Type of Doctoral Degree Offered	Type of Legal Control Public	 Private	 Total
Ph.D. only	134 (407)	63 (219)	197 (626)
Ed.D. only	125 (381)	91 (283)	216 (664)
Both the Ph.D. and the Ed.D.	362 (1,126.5)	274 (860)	636 (1,986.5)
TOTAL	621 (1,914.5)	428 (1,362)	1,049 (3,276.5)

*Numbers in parentheses represent the number of credit-hours given for the research courses.

Table 2 presents (a) the proportion of schools offering at least one of the types of research courses which are listed, (b) the proportion of the total research courses which are of each type, and (c) the mean number of courses for each type per school.

TABLE 2.--Type of research courses offered by 110 graduate institutions of education that offer the doctorate in education according to the 1963-1965 catalogue-study.

Type of Research Course	Proportion of the 110 Graduate Institutions of Education	Proportion of the 1049 Research Courses Examined	Mean Number of Courses Per School
Research method, design	96%	47%	4.44
Statistical methods	85	27	2.57
Testing and measurement	71	15	1.4
Needed research	22	5	.48
School surveys (which contribute to research)	16	3	.25
All others	14	4	.40
	304%	99%	
	(110)	(1,049)	(110)

Almost all the graduate institutions offer at least one course on methods and design. The next most frequent type of research courses is statistical methods; and almost three-fourth of the institutions have course offerings in testing and measurement. The category, needed research, is represented in about one out of every five graduate institutions. Finally, the type of research course termed school survey and specifically defined as making a potential contribution to general knowledge or to the training in research techniques appears in only 18 of the 110 graduate institutions.

The research courses represent only 6 percent of all graduate courses offered in the 110 graduate institutions of education. And there is an average of 9.5 courses in research that are given for credit per school. It is misleading, however, to interpret this average number of research courses per school as signifying that the graduate students have an opportunity to take exclusively nine research courses. Since many research courses in most graduate institutions of education are offered in many departments within the institution and seem to reflect the specific field or area of concentration rather than the general field of education, a student's opportunity to study research methodology is more restricted than might appear by the figure, 9.5 research courses per school.

Perhaps this latter point is somewhat substantiated by observing the range of names of departments or divisions under which the research courses are offered. The titles of the departments are classified according to two major terms: research vs. non-research. The research-term includes such names of departments as (1) research, (2) testing and measurement or evaluation, (3) research and measurement or testing, (4) research, statistics, and measurement, (5) statistics and measurement, (6) statistics and research, and (7) research and administration. The non-research term includes, among others, physical education, guidance and counselling, art, music, educational administration, secondary education, educational psychology, and the general term of school of education. Table 3 presents the proportion of schools according to the two major classifications of names of departments that offer research courses.

TABLE 3.--Proportion of graduate institutions of education according to the names of departments within the graduate institutions of education that offer research courses

Names of Departments or Divisions that Offer Research Courses	Proportion of Institutions
A. Departments have Names that Represent a Research-Term	
Testing and measurement or evaluation	2%
Statistics	1
Research and evaluation	1
B. Departments Have Names that Represent a Research-Term as well as a Non-Research Term	
Departments with non-research terms	
Plus department of research	8
Plus department of testing and measurement or evaluation	6
Plus departments with the word, statistics, in them	6
Plus department of research and departments with the word, statistics, in the title	2
Plus department of testing and measurement, department of statistics and research	1
C. Departments Have Names that Represent a Non-Research Term	73
	100%
	(110)

According to the 1963-1965 catalogue-study, slightly over one-fifth of the graduate institutions of education have at least one department that offers research courses and is entitled with a research-term. Since most of the graduate institutions (73 percent) do not have separate divisions or departments specified for training in research, it seemed important to have a more extensive examination of the names of departments in which research courses are found.

The more extensive analysis of the names of departments in which research courses are found is limited to the type of research course called "methods, design." Rationale is three-fold. First, the courses in methods represent the most common type of research courses with 96 percent of the schools offering at least one course. Thus, the analysis permits inclusion of almost all the graduate institutions. Secondly, other types of research courses are located more with specific departments; for example, courses in testing and measurement and in statistics are more commonly found in departments of educational psychology; courses in school surveys are usually located in departments of educational administration. Thirdly, courses in research methodologies signify a rather broad kind of research training and has importance for all areas of specialization in education.

Table 4 illustrates the point that courses in methods are located in a variety of departments. Only 12 percent of all the courses are located in departments with names having a research-term. The departments of educational psychology and of guidance and counseling provide 12 and 10 percents of the courses, respectively.

TABLE 4.--Proportion of courses in research methods, designs according to their location in departments of 106 graduate institutions of education (1963-1965 catalogue-study).

Name of Department	Proportion of all courses in methods, design
Departments have a research-term in the name (statistics, research, etc.)	12%
Educational psychology	12
Guidance and counseling	10
Social science, history, philosophy	9
Physical education	6
Educational administration	5
Elementary education	3
Secondary education	1
All other C & T departments	10
All other departments (e.g., educational services, audio-visual, special education)	6
Combinations of above	4
Workshops, advanced graduate courses, seminars	9
No name of department given (usually noted as graduate school or department of education)	13
	100%
	(488)

By observing the catalogues of some institutions, one finds that many courses entitled "methods" are located in several departments of a graduate institution. For example, in a public university in the midwest, a course entitled research in art education is in the division of art education, another in "recent research in reading" under curriculum and teaching, another in "methods in educational research" under educational psychology, another in "research methods" under home economics education, and another in ". . . research in physical education and recreation" under physical education. Other examples could be given to illustrate the wide range of courses in methods and of their location in several departments within the same institution.

The content analysis of the catalogues does not provide a rationale for the administrative procedures of offering the courses in methods under the variety of departments within each institution. Nor does the analysis provide information concerning all the primary purposes each sub-field of education or each department has for training in research by offering the respective courses in research methodologies. There may be two possible explanations for the different departments within the institution to offer their own courses. First, the graduate institution of education may have as her model,the graduate faculties of university where many academic fields are organizationally and administratively bound together. And as one will note by an examination of the catalogue of any graduate school of the university, each department belonging to the graduate faculties offers courses in research methodologies that are rather distinct to that particular academic field. Secondly, it seems rather natural to assume that all students who take the courses in research methods by a particular department or in a particular sub-field do not plan upon the receipt of their graduate degree to undertake careers in full-time research. However, it then seems practical that a large proportion of these students who may be generally termed as potential "consumers of research" rather than "producers of research" have to receive some form of training in research methods germane to their own particular discipline in order to be effective "consumers of research."

The focus of issue is not necessarily on the scattering of the courses in research methods throughout the departments within the graduate institution of education. The primary concern resulting from the content analysis is the sufficient lack of organizational evidence for training in research by a department of the institution which is designated for the preparation for educational research. (Recall that only 12 percent of the courses in methods are located in departments that have a research-name.) It seems that, if students in education do not see educational research as an academic pursuit in its own right, career decisions for research are rather tenuous. It might be assumed that a student body that does not perceive educational research as a career may affect the quantity and the quality of the research training with is offered.

As shown in Table 5 (page A6), differences are almost negligible for the proportion of graduate courses that are research courses, according to the type of legal control and the type of doctorate in education administered by the institution. At least two reasons may explain the results. First, through such communication channels as the literature in the field and national conferences, graduate institutions keep informed of the academic programs and activities undertaken by each. Such information may tend to reduce gross differences of courses offered by institutions. Second, because institutions may desire to have at least some type of equal opportunity in attracting students, most institutions that have the same major areas of specialization in education will offer comparable courses.

TABLE 5.--Proportion of research courses offered by graduate institutions of education according to the type of legal control of the institution and the type of doctorate in education offered by the institution.*

Type of Degree Offered	Type of Legal Control	
	Public	Private
Ph.D. only	7% (1,986)	10% (621)
Ed.D. only	7% (1,850)	6% (1,414)
Both degrees	6% (6 221)	6% (4,867)

*Numbers in parentheses represent the bases of percentages; i.e., the total number of courses offered the graduate students in the school or department of education.

According to the type of research courses offered and the type of legal control, some differences occur. Data are given in Table 6.

TABLE 6.--Proportion of graduate institutions that offer the types of research courses analyzed in the 1963-1965 catalogue-study according to the type of legal control of the institution.

Type of Research Course	Type of Legal Control	
	Public	Private
Research methods, design	96%	98%
Statistical methods	86	85
Testing and measurement	70	73
Needed research	19	27
School surveys (which contribute to research)	20	10
All others	16	12
	307%	305%
Number of schools:	(69)	(41)

Differences occur in two types of research courses: needed research and school surveys. In public schools the courses in school surveys (which contribute to research) are more often found. Courses in needed research are found slightly more often in private institutions. Explanation for both findings may be in terms of the needs of the professional clientele more closely associated with the two types of institutions. The public institutions may have greater demands by the public school systems than the private graduate institutions. The private institutions, therefore, may have greater freedom to determine the goals of research than what may be expected in institutions that are so closely related to the needs of some of the vested interest groups.

Table 7 presents the proportion of graduate institutions offering the different types of research courses according to the type of degree offered by the institution.

TABLE 7.--Proportion of graduate institutions that offer the types of research courses analyzed in the 1963-1965 catalogue-study according to the type of doctorate in education offered by the institution.

	Type of Degree Offered		
Type of Research Course	Ph.D. only	Ed.D. only	Both the Ph.D. and the Ed.D.
Research methods, design	100%	90%	98%
Statistical methods	73	83	91
Testing and measurement	73	60	76
Needed research	23	13	26
School surveys (which contribute to research)	9	17	19
All others	14	13	16
	292%	276%	326%
Number of schools:	(22)	(30)	(58)

Slight differences occur for all types of research courses except one; namely, the category termed "all others." Slightly less of the institutions administering only the Ed.D. offer courses for research methods, testing and measurement, and needed research. Slightly less of those administering only the Ph.D. offer courses for statistical methods and school surveys.

According to the type of degree administered and the type of legal control, differences occur for the proportion of institutions offering the types of research courses (Table 8, page A16). Slightly less of the public institutions granting only the Ed.D. offer courses for research methods and testing and measurement. Slightly less of the public institutions granting only the Ph.D. offer courses for statistical methods; although slightly more than the previous type of institution, still private institutions granting only the Ed.D. tend slightly less to offer this type of course. Public institutions granting only the Ph.D. and private institutions administering both degrees offer slightly more the courses for needed research. Courses for school surveys are offered less by private institutions granting only the Ph.D. and slightly more by public institutions granting only the Ed.D. or both degrees. No matter which degree-administering situation is represented, slightly more of the public institutions offer courses termed "all others."

A brief summary is given for the analysis of the catalogue-study. First, differences do not occur for the proportion of all graduate courses devoted to research, according to the

TABLE 8.--Proportion of graduate institutions that offer the types of research courses analyzed in the 1963-1965 catalogue-study according to the type of legal control of the institution and the type of doctorate in education offered by the institution.

	Type of Degree Offered					
	Ph.D. only		Ed.D. only		Both the Ph.D. and the E.D.	
Type of Legal Control	Public	Private	Public	Private	Public	Private
Type of Research Courses						
Research Methods, Design	100%	100%	88%	92%	97%	100%
Statistical Methods	67	86	88	77	92	90
Testing and Measurement	73	71	53	69	76	76
Needed Research	27	14	12	15	19	33
School Surveys (which contribute to research)	13	0	24	8	22	14
All Others	20	0	18	8	14	8
	300%	271%	283%	269%	320%	321%
	(15)	(7)	(17)	(13)	(37)	(21)

two institutional variables, type of legal control and type of doctorate in education granted by the institution. Secondly, the types of research courses offered by the institution slightly differ according to the type of legal control: private institutions offer slightly more courses in needed research and slightly less courses in school surveys. Thirdly, the types of research courses slightly differ according to the type of doctorate in education administered by the institution: schools that offer only the Ed.D. have slightly less offerings in courses of research methods, testing and measurement, and needed research; schools granting only the Ph.D. in education offer slightly less courses in statistical methods and in school surveys. (It must be kept in mind, however, that the measure is an institutional one, not one of the individuals holding these degrees.) One of the key issues raised as a result of the content analysis is the lack of organizational evidence on the part of the graduate institution of education to locate a sufficient core of research courses in a single department so specifically named and purported for the training in educational research. The implication is that graduate students may not see educational research as an academic pursuit in its own right and therefore the career decisions for research may be rather tenuous.

The remaining tables for the appendix cover two general areas: (1) a few marginals of the catalogue-study (Tables 9-12); (2) selected marginals on data pertaining to some historical background of the graduate institutions (Tables 13-26). For the latter, information was gathered from the following sources: (1) the 1963-1965 catalogue-study; (2) a postcard survey by the writer to the graduate offices of the school or department of education; (3) A Guide to Graduate Study: Programs Leading to the Ph.D. Degree: Second Edition. Frederic W. Ness, Editor. American Council on Education, Washington, D.C., 1960; (4) The Doctorate in Education: Volume Two/The Institutions. The American Association of Colleges for Teacher Education, Washington, D.C., 1960; (5) American Universities and Colleges: Ninth Edition. Allan M. Carter, editor. American Council on Education, Washington, D.C., 1964; (6) Keniston's scale of university reputation (70), and Wilder's study of Reading Experts (149); and (7) the 1964 institutional survey of deans of graduate institutions of education.

TABLE 9.--Proportion of graduate institutions of education according to research courses as percent of all graduate courses in education.*

Proportion of Graduate Courses that Represent Research Courses (%)	Proportion of Institutions (%)
1-4	21
5	17
6	18
7-8	21
9-13	18
14-20	5
21-24	1
	101%
	(108)

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*The number of graduate institutions on which percentages are based in this table and the subsequent tables represents the number of institutions that received questionnaires for the 1964 institutional survey of Lazarsfeld's and Sieber's project. One institution which had no research courses according to the 1963-1965 catalogue-study and was excluded from the percent-tabulations was also dropped at a later date from the institutional survey.

TABLE 10.--Proportion of graduate institutions according to the percent of graduate courses with research entrance requirements (research prerequisites or required instructor's permission).

Proportion of Graduate Courses that Represent Courses with Research Entrance Requirements (%)	Proportion of Institutions (%)
0	16
0.1-1.0	10
1.1-1.5	15
1.6-2.0	12
2.1-3.0	14
3.1-4.0	12
4.1-5.0	10
5.1+	11
	100%
	(108)

TABLE 11.--Proportion of graduate institutions according to the proportion of research courses that have research entrance requirements (research prerequisites or required instructor's permission).

Proportion of Research Courses that Represent Courses with Research Entrance Requirements (%)	Proportion of Institutions (%)
0	16
1-20	17
21-35	20
36-50	19
51-70	14
71-100	15
	101%
	(108)

TABLE 12.--Proportion of graduate institutions of education according to the number of departments or divisions within the institution which offer research courses

Number of Departments that Offer Research Courses	Proportion of Institutions (%)
None (no specific department mentioned)	31
One	11
Two	22
Three	12
Four	8
Five	3
Six	3
Seven	5
Eight or more	6
	101%
	(108)

TABLE 13.--Proportion of graduate institutions of education according to their geographical location in the United States

Geographical Location	Proportion of Institutions (%)
Western	22
North Central	30
North Eastern	24
Southern	24
	100%
	(108)

TABLE 14.--Proportion of graduate institutions of education according to the type of legal control of the institution.

Type of Legal Control	Proportion of Institutions (%)
Public	63
Private	37
	100%
	(108)

TABLE 15.--Proportion of graduate institutions of education according to the Keniston's scale of reputation of the university to which the school or department of education belongs.

Keniston's Scale of University Reputation	Proportion of Institutions (%)
Top 12	7
Next 10	9
Other AGS universities	18
Other universities	32
Not included in the Keniston's scale	33
	99%
	(108)

TABLE 16.--Proportion of graduate institutions of education according to the type of doctorate in education administered by the institution, 1963-1964.*

Type of Doctorate in Education granted by the Institution	Proportion of Institutions (%)
Ph.D. only	18
Ed.D. only	27
Both the Ph.D. and the Ed.D.	55
	100%
	(108)

*According to the postcard survey of graduate offices of schools or departments of education, two of the institutions that had been classified for the catalogue-study as offering only the Ph.D. in education had to be reclassified: one was determined not to give the doctorate in education and the other institution offered both the Ph.D. and the Ed.D. Also, one institution classified as offering only the Ed.D. was determined not to offer the doctorate in education.

TABLE 17.--Proportion of graduate institutions of education according to the time-period in which the doctorate in education was first administered by the school or department of education*

Time-Period in Which the Doctorate in Education was First Administered	Proportion of Institutions (%)
Before 1920	18
1920-1939	32
1940-1961	48
Don't know	2
	100%
	(108)

*In institutions where both degrees are offered, the doctorate in education that was first administered was considered for this table.

TABLE 18.--Proportion of graduate institutions of education that administer both the Ph.D. and the Ed.D. according to the elapse of time between the administering of the two degrees and the first degree administered.*

Elapse of Time between the Administering of the Two Degrees	First Degree Administered was the	
Number of years	Ph.D. (%)	Ed.D. (%)
1-3	11	53
4-12	18	27
13-21	39	0
22-49	32	20
	100%	100%
	(38)	(15)

*Four institutions administered both the Ph.D. and the Ed.D. at the same time.

TABLE 19.--Proportion of graduate institutions of education according to the administrative control over the doctoral program and the type of doctorate in education that is offered.

	Type of Doctorate in Education Administered		
Jurisdiction over the Doctoral Program	Ph.D. only	Ed.D. only	Both the Ph.D. and the Ed.D.
Graduate faculties of the university	100%	55%	64%
School or department of education	0	34	7
Both the graduate school and the school or department of education	0	10	29
	100%	99%	100%
	(20)	(29)	(59)*

*Of the 59 institutions, 12 institutions represent the situation where jurisdiction over the two degrees is divided according to the type of degree: all have the jurisdiction of the Ed.D. under the school or department of education; the Ph.D. in 11 of them is under the jurisdiction of the graduate faculties and one is under the jurisdiction of both the graduate faculties and the graduate institution of education.

TABLE 22.--Proportion of universities to which the schools or departments of education belong according to the time-period when the first Ph.D. was granted by the university.

Time-Period When the First Ph.D. was Granted by the University	Proportion of Universities (%)
Before 1881	6
1881-1900	23
1901-1910	3
1911-1920	9
1921-1940	19
1941-1961	26
Don't know	14
	100%
	(108)

TABLE 23.--Proportions of graduate institutions of education that offer the doctorate in education according to the time-period when the school (college) or department of education was founded.

Time-Period When the School (College) or Department of Education was Founded	Proportion of Institutions (%)
Before 1881	3
1881-1900	9
1901-1910	20
1911-1920	24
1921-1940	19
1941-1961	10
Don't know	14
	99%
	(108)

TABLE 24.--Proportion of institutions according to the elapse of time between the granting of the first Ph.D. by the university and the administering of the first doctorate in education by the graduate institution of education.

Elapse of Time between the Granting of the First Ph.D. and the Administering of the First Doctorate in Education (Number of years)	Proportion of Institutions (%)
0	14
1-5	15
6-15	11
16-30	18
31-80	18
The Ph.D. in liberal arts NOT granted first	9
Don't know	14
	99%
	(108)

TABLE 25.--Proportion of graduate institutions of education that offer the doctorate in education according to the elapse of time between the founding of the school (college) or department of education and the administering of the first doctorate in education by the graduate institution of education.

Elapse of Time between the Founding of the School (College) or Department of Education and the Administering of the First Doctorate in Education (Number of years)	Proportion of Institutions (%)
0	1
1-5	8
6-10	9
11-20	12
21-30	13
31-40	11
41-75	17
Degree came before the founding of the school (range is 1-30 yrs)	12
Don't know	17
	100%
	(108)

TABLE 26.--Proportion of institutions according to the proportionate size of the faculty in the school (college) or department of education.*

Proportionate Size of the Faculty in Education (%)	Proportion of Institutions (%)
1-5	34
6-10	37
11-15	15
16-100	14
	100%
	(108)

*Proportion represents the full-time graduate and undergraduate faculty of the university. The source used for tabulation was the Ninth Edition of American Universities and Colleges, edited by Allan M. Carter.

APPENDIX B

DESIGN OF SPECIFIC INSTRUMENTS IN THE PROJECT

There were five questionnaire surveys from which data were obtained for the present report. Three represented the institutional surveys conducted by Sieber and Lazarsfeld; the fourth source was the questionnaire survey of behavioral scientists conducted by Brown; and the fifth source was the questionnaire survey of the 1964 doctoral recipients in education by Buswell, McConnell, et al. Except for the latter the writer formulated and inserted questions in each questionnaire. For purposes of background data for the project, the writer conducted interviews with selected individuals in graduate institutions of education and in graduate departments outside the school of education.

The following five sections of the Appendix present the designs of the instruments and questions inserted by the writer.

1. Deans' and coordinators' institutional questionnaire (data collected by Sieber and Lazarsfeld and analyzed by Millikan).

In the May 1964 institutional surveys of deans and research coordinators of the 109 graduate institutions of education that offer the doctorate in education, three instruments were mailed. For deans where no research coordinator existed there was a twenty-seven-page instrument; for deans of institutions where a research coordinator existed there was a sixteen-page instrument; and for the research coordinator the questionnaire had twenty-four pages. The latter two instruments covered the same major topics presented in the questionnaire for deans of institutions without research coordinators.

The institutional questionnaire covered the following major topics:

1. Institutional data, including size of graduate program, size of doctoral program, level of admission to the graduate program, size of graduate faculty in education, placement of recent doctoral recipients in education, *et cetera*.

2. Research and other goals of the graduate program, including the dean's application of the term, "educational research," the emphasis of research by the faculty of education, which groups most affect the balance of emphasis between teaching, field service and research in the graduate institution of education, types of graduate preparation emphasized, hiring preferences, and the types of interchanges between graduate institutions of education and other divisions in the university, *et cetera*.

3. Arrangements for research and service, including such administrative arrangements as reducing teaching loads of faculty to conduct research, difficulties experienced in hiring new staff members for research, the participation of the dean in the actual conduct of research, and the existence of training programs for people who want to make research a career, *et cetera*.

4. Field service bureaus, including the existence of such organizations and the level of interest and participation in field service by the faculty.

5. Research bureaus, including the existence of such organizations, the level of interest and participation in the bureaus by the faculty.

6. Research teams outside of bureaus, including the number, the size and composition of team projects, the budget, and number of students participating on the projects, et cetera.

7. Individual projects outside of research bureaus, including the number of studies, the budget of the projects, and the number of students working on the projects, et cetera.

8. Substantive areas of all studies conducted outside of research bureaus, including what research is presently being undertaken and in what areas the dean would like more to be done.

9. Support for research outside of bureaus, including sources of support and an evaluation of what schools of education are doing the most competent and worthwhile research, et cetera.

10. General educational opinions and problems of educational research perceived by the dean.

11. Personal information about the dean, including background characteristics and experiences in research such as the longest period of time during which research was the primary activity, et cetera.

Questions that were inserted by the writer covered the following information:

1. Size of the graduate program.

2. Size of the doctoral program according to the registered number of students working for the Ed.D. and the Ph.D. in education.

3. Type of training programs for research and type of graduate preparation emphasized.

4. Participation on projects by students.

5. Opinions of the dean on selected problems facing educational research and training in research.

6. Financial support for research.

2. Bureau directors' questionnaire (data collected by Sieber and Lazarsfeld and analyzed by Millikan).

In the February 1965 survey of 134 directors of research organizations affiliated with 64 graduate institutions of education, the thirty-page instrument was also a mailed questionnaire. The institutional questionnaire covered the following major topics:

1. Historical information about the research unit, including key events and persons or groups responsible for the development of the unit, turning points in the organization's history, current goals of the unit, and the director's application of the term, "educational research," et cetera.

2. Administrative control, including the ways and means of implementing the research goals of the unit.

3. Responsibilities of the director, including, among others, the activity of providing opportunities for students to participate in research; reference groups of the director, et cetera.

4. Activities of the unit, including the substantive areas of research being undertaken now and in what areas the director would like more to be done, what services are being performed by the unit and the organizational arrangements for field services within the unit, et cetera.

5. Training of graduate students, including the type of training program in the unit, the number of students from the school of education who affiliate in some capacity with the unit, the number of students from outside the school of education who are associated with the unit, the type of educational programs within the unit, the budget for training programs, the difficulties encountered in obtaining graduate students to affiliate with the unit, the placement of recent doctoral recipients who worked in the unit, and innovations concerning the unit's use or training of students.

6. Professional personnel of the unit, including an actual chart of the organization of the unit, number of part-time and full-time professional research staff, number of faculty members (non-staff) whose research is facilitated by the unit, type of research projects being conducted within the unit, and recruitment procedures and sources for the staff in the unit, and the types of interchanges between the units and other divisions within and outside the university, et cetera.

7. Financial support, including possible sources of support, sources for originating plans for new studies to be undertaken in the unit, and what educational research organizations in the nation are doing the most competent and worthwhile research, et cetera.

8. General educational opinions and problems of educational research held by the director.

9. Personal information about the director, including background characteristics and experiences in research.

Questions that were inserted by the writer covered the section on training of graduate students.

3. Behavioral scientists' questionnaire (data collected by Brown and analyzed by Millikan).

In the May 1965 survey of 367 psychologists and 340 sociologists in the academic departments of 77 of the 107 universities that represented the Lazarsfeld's and Sieber's project, a twelve-page instrument was mailed to the respondents. Both samples represented lists of names obtained from the 1964-65 catalogues of the graduate schools. For the sociology sample, the catalogue-listings were checked against the listings in Graduate Departments of Sociology, the 1965 publication by the American Sociological Association. Random numbers were used to select the names; the number of names for each department was kept proportional to the size of the department. Individuals with the rank of assistant professor or more were included in the study.

The design of the instrument included the following major topics:

1. Acquaintance with educational research, including interest in educational research, rationale for lack of professional contact with professors in schools of education, and substantive areas of research in education undertaken by the behavioral scientist, *et cetera*.
2. Contact with scholars in education, including the types and frequencies of interchanges with professors in schools of education, most important types of contacts, rewards and problems encountered by the contacts, evaluations of teaching graduate courses in which graduate students in education are enrolled, and attitudes about taking a position in a school of education, *et cetera*.

3. Features of research, including substantive areas of research undertaken during the past ten years, allocation of professional time to teaching, research, and administrative functions, communication channels utilized to keep informed about research interests, professional honors, and attitudes about applied research, et cetera.

4. Opinions on selected issues in education and educational research held by the behavioral scientist in departments outside the school of education.

5. Background information about the behavioral scientist, including background characteristics, career line, income, membership in professional organizations, and a list of publications.

Questions that were inserted by the writer covered information on teaching of graduate courses in which graduate students in education had been enrolled. There were both close-ended and open-ended questions. The respondent was asked to evaluate the performance of graduate students in education compared with other graduate students; if the assessment were checked "poorer," the respondent was asked to give the rationale for poorer performance. He was asked about his ever recommending an undergraduate or graduate student in his department to transfer to the doctoral program in the school of education rather than remain in the behavioral science department; if the recommendation had ever occurred, rationale for the action was asked.

4. Doctoral recipients' questionnaire (data collected by Buswell, McConnell, et al. and analyzed by Millikan).

In the 1965 survey of the 1964 doctoral recipients in education, an eleven-page instrument was mailed to 2189 individuals. The questionnaire covered the following major topics:

1. Student selection variables, including age at the receipt of the doctorate in education, decision to study for the doctor's degree, original objective sought in taking graduate study, teaching or other school experiences prior to the receipt of the doctorate, the undergraduate major and institution, number of undergraduate courses in education, marital status at the time of graduate studies, employment of parents in teaching or educational work, et cetera.

2. Graduate program variables, including research experiences prior to receiving the doctoral degree, the writing of a master's thesis, the publication of any research reports prior to the receipt of the doctorate, time-periods taken to complete the doctoral program, subfield of education in which the individual majored, the number of semesters of different types of assistantships, courses in statistical methods, research methodology and college mathematics, rationale for choosing the graduate school where the individual received the doctoral degree, sources of financial support for the doctoral work, rationale for taking graduate courses outside the school of education, a descriptive abstract of the individual's dissertation, and the type, the source and the amount of stipends received during the doctoral program, et cetera.

3. Post-doctoral variables, including actively now working on a research project, preference of work-patterns in doing research now, allocation of professional time to teaching, research, and administration, present position, publication of a research study closely related to the topic of the individual's dissertation, and membership in the two professional organizations considered by the individual to be most valuable to him, et cetera.

The writer included on the 1750 data cards received from the California-study the following information obtained from the 1964-institutional surveys:

1. level of admission to the graduate program of the graduate institution of education where the individual received his doctorate; the measure was operationally defined as the proportion of students who applied to the total graduate program in education that were accepted for the academic year, 1963-64;

2. formal entrance requirements for admission to the graduate program;

3. index of research emphasis as perceived by the dean of the graduate institution of education: the number of times research was ranked as the first responsibility of the faculty in education by ten groups that the dean was asked to estimate their judgment;

4. type of doctorate in education administered by the graduate institution of education: the Ph.D. only, the Ed.D. only, or both the Ph.D. and the Ed.D.;

5. proportion of doctoral students who were registered in 1963-64 as working for the Ph.D. in education;

6. type of preparation which receives the greatest emphasis in the graduate school or department of education;

7. type of training program offered by the graduate institution of education for people desiring a career in research;

8. the existence of a research organization affiliated with the school or department of education;

9. proportion of the graduate faculty in the school of education that were doing research in the academic year 1963-64;

10. index of institutional quality as measured by the Keniston scale of university reputation;

11. proportion of the graduate faculty of the school or department of education that received most of their training for their highest degrees outside any school or department of education; and

12. the administrative control of the Ed.D. and the Ph.D. in education.

5. Qualitative interviews (collected by the writer).

All three groups included in the interviews were asked to respond to the following close-ended questions. They pertained to general educational opinions and problems of educational research and represented items included in the institutional surveys of Sieber's and Lazarsfeld's survey, The Organization of Educational Research (119). These questions were self-administered after the open-ended part of the interview had been completed.

The items of the close-ended questions are:

1. There are several issues pertaining to the graduate program in education which are receiving attention these days. Each of the following statements takes a position on one of these issues. Indicate the extent to which you agree or disagree with each statement.*

1.1 The Ph.D. should be a research degree and the Ed.D. should be a professional degree.

1.2 The research techniques and methods used in educational research tend to lag behind those used in behavioral science generally.

1.3 The Ph.D. generally has higher prestige than the Ed.D.

1.4 Schools or departments of education generally have low prestige within the universities.

1.5 Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.

2. The following is a list of factors that some people claim have hindered the advancement of educational research. If you think any of these has hindered educational research, please indicate whether it is a major or minor hindrance. If you think it has not hindered, please indicate accordingly.

2.1 The quality of research training provided in graduate schools or departments of education.

2.2 The quality of research techniques used in educational research.

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*The response categories for these items ranged from strongly agree, mostly agree, undecided to mostly disagree and strongly disagree.

2.3 Intellectual ability of people doing research in education.

2.4 Lack of interest in educational research on the part of behavioral scientists outside schools of education.

2.5 Types of services and studies desired by school systems.

2.6 Low standards for acceptance of research articles in journals.

2.7 Lack of interest in research on the part of administrators of schools or departments of education.

2.8 Lack of recognition and rewards for research accomplishment.

The following is the interview schedule for professors who taught research courses (1) in the graduate school or department of education and (2) in a psychology department and (3) a sociology department outside the school of education. (The two professors of the behavioral science departments outside the school of education had had contacts with graduate students in education through their teaching.)

1. What formal experiences in the present graduate program of your subject area are most helpful to the doctoral student for the development as a researcher in your particular academic field?

2. What informal experiences in the present graduate program of your subject are most helpful to the doctoral student for the development as a researcher in your particular academic field?

3. Are there differences between the training in research that a graduate student in education and a graduate student in the behavioral sciences outside the department of education may receive?

3.1 If yes, what are the differences?

3.2 If no, what are some reasons for no differences?

4. Are there any basic differences between the doctoral student in education and the doctoral student in the behavioral sciences outside the department of education who desires a career in research: (1) differences concerning capabilities of the student; (2) differences concerning opportunities for doctoral recipients to enter careers as full-time researchers; and (3) differences concerning the reward systems for a career decision in research?

If yes, what are they?

If no, why not?

5. What would be some features of a research training program for doctoral students that you would consider to provide an optimal framework for the development of professional personnel in educational research?

Each respondent was asked brief background questions, including, among others, his own graduate training in research and his career line.

The following is the open-ended interview schedule for the three recent doctoral recipients in education. One doctoral recipient had been prepared for a career of full-time research; the other two, for a career of full-time teaching in a college.

1. Will you briefly describe your training program and experiences as a doctoral student at ________________ (name of institution)?

2. What formal experiences in your doctoral program were most helpful to the development of your research abilities in your particular subfield?

3. What informal experiences in your doctoral program were most helpful to the development of your research abilities in your particular sub-field?

4. Before the receipt of the doctorate in education, were you ever connected with a research or field service organization affiliated either with the graduate institution of education or with a department outside the graduate institution of education?

If yes:

4.1 Name of the organization?

4.2 How long were you associated with the organization?

4.3 In what capacities were you connected with the organization?

4.4 Thinking back to the time when you first became associated with the organization, what were the main considerations that prompted you to become associated?

4.5 What activities in the organization provided the most valuable experiences for you to obtain competency to do research?

4.6 What activities in the organization provided the least valuable experiences for you to obtain competency to do research?

4.7 To the best of your knowledge, how well informed were the students in your graduate school of education about the activities and goals of the organization with which you were connected?

4.8 Did you ever recommend to a fellow graduate student with professional interests similar to yours that he work in the organization where you were?

If no to question 4:

4.1 Did you ever seriously consider affiliation in some capacity with a research or field service organization?

4.2 Name of the organization?

4.3 Did you apply directly for a position at the organization?

4.4 Why did you not affiliate in some capacity with the organization?

4.5 Would you recommend (or did you ever recommend) to a doctoral student with professional interests similar to yours that he work in the organization that you had seriously considered?

5. How well do you feel your graduate training prepared you for the work you chose as your professional career?

6. What would be some features of a research training program for doctoral students that you would consider to provide an optimal framework for the development of professional personnel in educational research?

Each respondent was asked brief background questions, including, among others, publication of research reports prior to the receipt of the doctorate and anticipated professional activities.

The following is the interview schedule with the twelve doctoral students. Eight were students in education and four were in the department of sociology.

1. For what degree are you a candidate?

2. What is your major area of concentration?

3. What activities in your doctoral program have provided the most valuable experiences for you to obtain competency to do research?

4. What activities in your doctoral program have provided the least valuable experiences for you to obtain competency to do research?

5. In some graduate schools or departments of education, a formal entrance requirement for admission to the program is either a teaching certificate or professional experience. Even if neither is required, graduate institutions of education often stress the desirability of having this type of professional experience.

To obtain competency to do research, how relevant in your opinion is having professional experiences or a teaching certificate prior to doctoral work? Please briefly explain your assessment.

6. How would you rate the research training you are receiving in the school of education as compared to the research training received by doctoral students in the behavioral science departments outside the school of education?

7. Have you been or are you presently connected with a research or field service organization affiliated either with the graduate institution of education or with a department outside the graduate institution of education?

If yes:

7.1 Name of the organization?

7.2 How long have you been associated with the organization?

7.3 In what capacities were you connected with the organization?

7.4 Thinking back to the time when you first became associated with the organization, what were the main considerations that prompted you to become associated?

7.5 What activities in the organization have provided the most valuable experiences for you to obtain competency to do research?

7.6 What activities in the organization have provided the least valuable experiences for you to obtain competency to do research?

7.7 To the best of your knowledge, how well informed are the students in your graduate school of education about the activities and goals of the organization with which you are connected?

7.8 Would you recommend to a fellow student with professional interests similar to yours that he work in the organization where you are?

If no to question 7:

7.1 Have you ever seriously considered affiliation in some capacity with a research or field service organization?

7.2 Name of the organization?

7.3 Did you apply directly for a position at the organization?

7.4 Why did you not affiliate in some capacity with the organization?

7.5 Would you recommend to a doctoral student with professional interests similar to yours that he work in the organization that you have seriously considered?

8. One way of measuring the primary activity of a person's professional career is the amount of time devoted to that activity. Upon the receipt of the doctorate, if you were able to obtain the position you really desired, where would you devote the major block of your professional time? (Choose only one.)

(a) In research _____

(b) In teaching _____

(c) In administration _____

8.1 When you began your doctoral work would you have chosen (a), (b), (c) as your primary activity?

If no, what three most important events during your doctoral program do you feel caused you to change your emphasis concerning your present choice of a career?

8.2 Do you feel that those who checked a primary activity other than research have different training experiences in research than those who checked research as the primary activity?

If yes, what types of graduate training distinguishes the two?

If no, briefly explain your assessment.

9. How well do you feel your graduate training is preparing you for the work you have chosen as your professional career?

10. What would be some features of a research training program for doctoral students that you would consider to provide an optimal framework for the development of professional personnel in educational research?

Each respondent was asked brief background questions, including, among others, his undergraduate major and major reason(s) for attending this particular graduate institution of education and university.

Additional materials that represented field interviews were used as background for the present study. These materials were collected during the Sieber's and Lazarsfeld's project. A field representative was commissioned to do a case study of a regional laboratory connected with a graduate institution of education in a western state. Also, Dr. Sieber conducted field interviews with some directors of research organizations who had participated in the institutional surveys. The data of these interviews supplemented the information collected by this writer.

Although not a part of the present investigation, materials collected by a post-card survey of authors of research articles related to education in 38 journals in the year 1964 were used as background information for the present investigation (119, Appendix D). Of the original 1014 empirical research articles examined in the 38 journals, thirteen per cent were excluded because each author was to be represented by only a single article. Also, 174 were excluded because of foreign addresses of the authors. Information included on the post-card covered patterns of co-authorship of the article, institutional affiliations at the time the study was performed, professional position at the time of the study, field or specialty and association with a research organization at the time of the study, and whether the topic represented results of the individual's dissertation. The data were collected during Sieber's and Lazarsfeld's project.

APPENDIX C

Results for the Production of Researchers by Graduate Institutions of Education According to a 48 x 48 Matrix of Institutional Variables. Production is Defined as (1) the Number of 1964 Doctoral Recipients in Education Who upon the Receipt of the Degree Entered Positions Where Research Was the Primary Activity and as (2) the Number of 1964 Doctoral Recipients who upon the Receipt of the Degree Entered Positions Where 50 to 100 Percent of Their Professional Time was Devoted to Research.

Rationale for presenting the results of the H-Test for the production of researchers by graduate institutions of education in a matrix is two-fold. First, all results are not presented or discussed in chapter three of the text. Secondly, since the emphasis of chapter three is on production of researchers determined by the measure of 50 to 100 percent of the professional time devoted to research, a comparison of the results based on the two operational definitions of production of researchers may be in order.

The following information is presented in the 48 x 48 matrix.

1. There are two major classes of organizational variables with each having three sub-categories: external characteristics of inputs, outputs and environment; internal characteristics of social structure, attitudes, and activities.
2. Under each sub-category there is a listing of the specific variables considered in this study. In parentheses after each variable is a number which designates the number of categories of the variable; e.g., the variable, legal control (2), has two classes: public vs. private.

3. The value in each cell of the matrix represents the computed value of the test statistic, H. If an asterisk is beside the value, then significance at the .05 (or below) level occurred.

   If a cell in the matrix has a dash (-), this means that the N's of one or more k samples were ≤ 3 and the H-Test was not performed.[1] The letters, NA, mean that the situation for the two variables under consideration is not applicable. For example, the letters, NA, are used for Var. 40 x Var. 41: the type of degree administered (Ph.D. only, Ed.D. only, and Both) x type of degree administered (Ph.D. only and Ed.D. only).

   Since H is distributed approximately as Chi-Square with k-1 degrees of freedom, the degrees of freedom for each cell of the matrix can be determined for any two variables under consideration by multiplying the number of categories of the two variables minus one.

4. Since the name of each variable is rather long, it has been deemed necessary for the matrix to list each variable by a number. Listed below are: (a) the code number of the variable; (b) the description of the variable; and (c) the source for operationally defining the institutional variable. (Questionnaire items come from the 1964 survey of deans of graduate institutions of education. Computed variables have been dichotomized according to the median case or the approximate median case.)

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
A. External Characteristics		
Inputs		
1. (2)	An index of an interdisciplinarily trained faculty: high (9-85%) vs. low (0-8%)	Q. 1.15: About how many faculty members in the graduate school...of education received most of their training for their highest degrees outside of any school or department of education? ____ (no.) ÷ Q. 1.14: How many persons are teaching courses to graduate students in the school or department of education, either full-time or part-time? (Hereafter we shall refer to this group as the "faculty.") ____ (no.)
2. (2)	Financing research projects outside of any research organization by the source, government (Federal + State): high (50-100%) vs. low (0-49%)	Q. 8.6: In the past fiscal year, which of the following possible sources financed proposals originating with and done by faculty outside of any research bureau? (...) (Please estimate the percentage of funds from each source.) % ____ State government ____ Federal government

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
3. (2)	Financing research projects outside of any research organization by the source, within the university (university + school of education): high (11-100%) vs. low (0-10%).	Q. 8.6: ... (...estimate the percentage of funds from each source.) % ____ University research funds ____ School or department of education research funds
Output		
4. (2)	Production rate: proportion of registered doctoral students who received the doctorate in education: high (14+ %) vs. low (0-13%).	Q. 1.8: How many students in education received the doctorate during the past academic year? ____ (no.) ÷ Q. 1.5: What is the total number of students now registered as working for the doctorate in the school or department of education? Ed.D. Ph.D. No. of students ____ ____
Environment		
5. (2)	Type of legal control: public vs. private.	Millikan's 1963-1965 catalogue study of graduate institutions of education.
6. (4)	Quality of university: Top 22 vs. Other AGS Universities, plus vs. Other Universities vs. Not Included in the Scale.	Keniston's scale of university reputation.

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
7. (2)	Index of interdisciplinary relations: arrangements between the school or department of education and other divisions within the university: high (7-16) vs. low (0-6).	Q. 2.8: Interchange between schools or departments of education and other divisions in the university are achieved in a variety of ways. Which of the following arrangements now exist with (1) academic departments, and (2) other professional schools in the university; ...? Now exists with Academic department Professional schools
8. (2)	Research index of interdisciplinary relations: high (1-4) vs. low (0).	Q. 2.8: ... (1) joint research appointments (2) visiting professors from other universities for research
9. (2)	Required interdisciplinary courses: number of departments that offer course work required of doctoral students and are outside the school of education: high (2+) vs. low (0-1).	Q. 1.10: Are any of the courses which are required for doctoral students of education offered only in a department outside the school or department of education. _____ Yes _____ No IF YES: which departments?

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
B. Internal Characteristics		
Social Structure		
10. (3)	Jurisdiction over the doctoral program: College of Education vs. Graduate college vs. Both.	Millikan's 1963-1965 catalogue-study and Q. 1.13: Is the doctoral program under the administrative control of the college of education, or is it under the control of the graduate college?
11. (2)	Index of completeness: level of admission to the graduate program: proportion of applicants to the graduate program that are accepted: closed (20-76%) vs. open (77-98%).	Q. 1.2: Please provide the following figures for new graduate students in education for the academic year of 1963-64. _____ Applied for admission to graduate school _____ Accepted for admission
12. (2)	Level of faculty supervision: proportion of faculty who supervise dissertations that are in areas of their own research interests: high (40-100%) vs. low (0-39%).	Q. 7.6: Sometimes a student works on a dissertation which closely reflects the current research interest of his adviser. How many faculty members in the graduate school or department of education have supervised dissertations of this kind during the past year? Number of faculty members _____ ÷ Q. 1.7: How many faculty members in the school or department of education are currently supervising doctoral dissertations? _____ (no.)

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
13. (2)	Size of the doctoral program: large (84+) vs. small (0-83).	Q. 1.5: What is the total number of students now registered as working for the doctorate in the school or department of education? Ed.D. ____ Ph.D. ____
14. (2)	Size of the social unit: large (18+ %) vs. small (0-17%).	Q. 1.9: Of the total number of doctoral degrees awarded by the university last year, approximately what percentage were received by students of education? ____%
15. (2)	Existence of a research organization: yes vs. no.	Sieber's and Lazarsfeld's 1965 institutional survey.
16. (2)	Proportion of the graduate faculty who do research: high (37-100%) vs. low (0-36%).	Q. 8.2: How many faculty members in the graduate school or department of education not associated with a bureau are presently doing research;... Presently ____ + Q. 6.3 of the directors' questionnaire: Number of professional research staff in the unit: ____ Part-time ____ Full-time (IF senior researchers associated with the unit were members of a department outside the school ...of education, Q. 6.9, the number was subtracted from the total given in Q. 6.3 in order to obtain only the number of researchers exclusively from the school or department of education.) ÷

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
		Q. 1.14: How many persons are teaching courses to graduate students in the school or department of education, either full-time or part-time? ____ (no.)
Attitudes		
17. (2)	Primary responsibility of the graduate faculty: number of groups the dean estimates to rank research as first responsibility of the graduate faculty of education: high (3-10) vs. low (0-2).	Q. 2.4: Graduate schools or departments of education vary according to the rank order of field service, teaching, and research as responsibilities of the faculty. There may also be disagreement within the same school about the relative emphasis that should be placed on these activities. To the best of your knowledge, how would the groups listed below rank the three activities in your school? (Rank 1 to 3 for each person or group with 1 as most important.) Groups whose opinion you (Dean) are asked to guess | Field Service | Teaching | Research
18. (2)	Primary responsibility of the graduate faculty: three groups in the graduate institution of education that the dean estimates to rank research as first responsibility...: high (1-3) vs. low (0).	Q. 2.4: ... Groups... Department chairmen Education faculty members Yourself (dean)

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
19. (2)	An index of research quality: mentioned vs. not mentioned.	Q. 9.10: Which graduate schools or departments in the nation are doing what you consider to be most competent and worthwhile research?
20. (3)	Type of graduate preparation emphasized: research alone vs. research plus others vs. non-research.	Q. 2.6: On the whole, which type of preparation receives the greatest emphasis in your graduate school or department of education? ____ For research ____ For college teaching ____ For college administration ____ For public school administration ____ For public school teaching
21. (2)	Type of graduate preparation emphasized: research (alone plus others) vs. non-research.	Q. 2.6: ...
22. (2)	Hiring preference: professors who have mostly done research in the field of education or a related field: High (6-11) vs. low (0-5).	Q. 2.7: If an opening for someone to teach a graduate course in each of the major fields listed below, which of the following persons would you prefer to hire? (Eleven major fields were given and choices of six types of persons offered.)
23. (2)	Hiring preference: professors trained outside a school of education who have either taught or done research in a related field: high (3-11) vs. low (0-2).	Q. 2.7: ...

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
24. (2)	Specialization of the two degrees: yes vs. no.	Q. 10.1: There are several issues pertaining to the graduate program in education...Each of the following statements takes a position on one of these issues. Indicate the extent to which you agree or disagree with each statement... c. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.
25. (2)	Status of the Ph.D.: yes vs. no.	Q. 10.1: ... g. The Ph.D. generally has higher prestige then the Ed.D.
26. (2)	Status of institutions of education: yes vs. no.	Q. 10.1: ... i. Schools or departments of education generally have low prestige within the universities.
27. (2)	Training for a career in educational research should be received outside the school of education: yes vs. no.	Q. 10.1: ... j. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
28. (2)	The quality of research training provided in graduate schools or departments of education is a hindrance: yes vs. no.	Q. 10.3: The following is a list of factors that some people claim have hindered the advancement of educational research. If you think any of these has hindered educational research,...check...appropriate box. (Leave blank if you think it has not hindered research.) Major Hindrance Minor Hindrance
29. (2)	Intellectual ability of people doing research in education is a hindrance: yes vs. no.	Q. 10.3: ...
30. (2)	Lack of interest in educational research on the part of behavioral scientists outside schools of education is a hindrance: yes vs. no.	Q. 10.3: ...
31. (2)	Types of services and studies desired by school systems are a hindrance: yes vs. no.	Q. 10.3: ...
32. (2)	Low standards for acceptance of research articles in journals are a hindrance: yes vs. no.	Q. 10.3: ...
33. (2)	Lack of interest in research on the part of administrators of schools or departments of education is a hindrance: yes vs. no.	Q. 10.3: ...

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
34. (2)	Lack of recognition and rewards for research accomplishment is a hindrance: yes vs. no.	Q. 10.3: ...
Activities		
35. (a)	Proportion of all graduate courses in education devoted to research methods: high (7-24%) vs. low (1-6%).	Millikan's 1963-65 catalogue-study.
36. (2)	Proportion of all graduate research courses in education which have entrance requirements (research prerequisites or permission of instructor): high (36-96%) vs. low (0-35%).	Millikan's 1963-1965 catalogue-study.
37. (2)	Formal entrance requirements for admission to the graduate program: no requirement vs. at least one requirement.	Q. 1.3: Is either a teaching certificate or professional experience in the schools a formal requirement for admission to the graduate program? (Check the appropriate box) Teaching certificate____ Professional experience____ Neither____
38. (2)	Formal entrance requirement for admission to the graduate program: no teaching certificate vs. teaching certificate.	Q. 1.3: ....

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
39. (2)	Formal entrance requirement for admission to the graduate program: no professional experience vs. professional experience.	Q. 1.3: ...
40. (3)	Type of degree administered by the graduate institution of education: Ph.D. only vs. Ed.D. only vs. Both the Ph.D. and the Ed.D.	Millikan's 1963-1965 catalogue-study.
41. (2)	Type of degree offered...: Ph.D. only vs. Ed.D. only.	Millikan's 1963-1965 catalogue-study.
42. (2)	Type of degree administered: both the Ph.D. and the Ed.D.: proportion of doctoral students working for the Ph.D.: high (32-99%) vs. low (1-31%).	Q. 1.5: What is the total number of students now registered as working for the doctorate? ... No. of students: Ph.D._____ Ed.D._____
43. (2)	Type of degree administered: for all 3 types of degree-administering situations: proportion of doctoral students working for the Ph.D.: high (25-100%) vs. low (0-24%).	Q. 1.5: ...
44. (3)	Type of program for training in research: specific program vs. part of the regular degree program vs. no program.	Q. 3.20: Is there a training program for people who want to make research a career? If so, what is the title, and what are the main features of this program?

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
45. (2)	Existence of a program for training in research: Yes (specific + part of degree program) vs. no program.	Q. 3.20: ...
46. (2)	Institutional setting for obtaining data for the dissertation: inside research units vs. outside research units.	Q. 5.6 of the directors' questionnaire: How many doctoral students in the school or department of education are using the data or facilities of your unit in preparing their doctoral dissertations?
47. (2)	Apprenticeships on projects: proportion of graduate students in residence that are connected with research projects being performed outside any research unit: high (.9-88%) vs. low (0-.8%).	Q. 6.8: How many graduate students are working with these research teams this year? + Q. 7.5: How many graduate students are working with individual projects this year? ÷ Q. 1.4: What is the number of students currently registered with the graduate school or department of education? In Residence Taking courses_____ Not taking courses_____
48. (2)	Range of research topics: the number of substantive areas on which research is being conducted outside any research unit: large (9-25) vs. small (0-8).	Q. 8.1: In which of the following areas, if any, is research now being undertaken in the school or department of education (either in teams or by individuals, but outside of bureaus)?...

The matrices and summaries of some findings follow.

Matrix C-1
(page C16)

Results of the Test Statistic, H, for Production of Researchers by Graduate Institutions of Education According to a 48 x 48 Matrix of Institutional Variables. Production is Defined as the Number of 1964 Doctoral Recipients Who upon the Receipt of the Degree Entered Positions where Research was the Primary Activity.

Matrix C-2
(page C17)

Results of the Test Statistic, H, for Production of Researchers by Graduate Institutions of Education According to a 48 x 48 Matrix of Institutional Variables. Production is Defined as the Number of 1964 Doctoral Recipients Who upon the Receipt of the Degree Entered Positions where 50 to 100 Percent of Their Professional Time was Devoted to Research.

by Graduate Insti
to a 48 x 48 Matr

Variable Number		1.(2)	2.(2)	3.(2)	4.(2)	5.(2)	6.(4)	7.(2)	8.(2)	9.(2)	10.(3)	11.(2)	12.(2)	13.(2)	14.(2)	15.(2)	16.(2)	17.(2
1.	(2)																	
2.	(2)	3.12																
3.	(2)	2.32	6.34															
4.	(2)	7.66	1.29	1.49														
5.	(2)	2.43	3.66	3.61	0.49													
6.	(4)	19.55	18.55	-	-	23.88												
7.	(2)	3.41	3.22	2.52	5.66	5.23	-											
8.	(2)	8.32	5.26	5.60	3.03	4.69	-	6.28										
9.	(2)	2.38	3.14	3.89	1.36	2.25	-	9.04	11.08									
10.	(3)	-	-	-	2.16	-	-	4.59	10.55	3.65								
11.	(2)	5.69	3.82	6.18	4.50	7.87	-	10.24	10.39	2.54	5.99							
12.	(2)	3.34	0.66	3.05	0.20	1.61	-	2.27	2.63	3.36	-	3.93						
13.	(2)	5.97	2.79	12.36	4.79	2.98	-	4.66	6.39	1.38	-	4.63	4.36					
14.	(2)	4.59	2.57	2.86	9.15	2.12	-	6.80	10.41	2.95	-	14.31	2.16	6.69				
15.	(2)	3.42	3.05	1.70	4.60	5.22	25.30	4.21	5.19	2.12	-	8.25	1.90	4.84	3.30			
16.	(2)	4.11	6.90	8.14	5.47	5.25	-	8.02	8.50	4.33	-	11.40	5.44	9.80	14.92	4.76		
17.	(2)	2.06	2.80	1.13	1.09	0.27	21.33	4.03	3.59	0.03	2.73	5.52	3.45	3.24	2.31	1.27	4.88	
18.	(2)	6.43	6.13	5.06	7.61	4.67	-	7.52	7.62	3.02	-	11.25	5.28	8.53	6.54	5.71	8.88	N.A.
19.	(2)	15.22	-	-	-	16.97	-	-	-	11.42	-	26.16	-	-	-	-	-	18.64
20.	(3)	-	-	-	-	-	-	-	-	-	-	-	-	-	3.90	-	-	-
21.	(2)	5.93	3.38	-	-	5.40	-	4.38	6.24	1.40	-	8.87	-	6.08	3.90	5.78	5.62	3.03
22.	(2)	5.48	5.67	8.05	4.45	4.97	-	7.52	10.92	8.26	4.91	11.30	4.66	3.82	5.64	5.32	5.92	7.46
23.	(2)	2.59	3.80	1.93	1.64	1.19	-	5.49	7.84	0.92	0.77	8.63	2.21	4.58	3.10	2.50	4.78	1.30
24.	(2)	3.54	4.54	4.97	4.74	0.59	-	5.11	2.54	1.53	-	4.98	0.92	4.40	3.84	1.42	11.38	0.83
25.	(2)	-	5.38	1.86	-	-	-	6.64	5.79	-	-	4.93	-	-	-	2.35	-	2.26
26.	(2)	0.80	4.80	3.07	1.39	0.50	-	3.43	3.72	0.70	-	6.38	-	-	1.72	2.84	4.48	1.57
27.	(2)	4.97	8.81	3.81	1.10	4.00	-	2.75	-	-	-	-	2.46	1.84	1.56	2.99	3.78	2.90
28.	(2)	-	4.62	-	1.75	-	-	-	4.97	-	-	-	3.52	-	4.58	-	-	-
29.	(2)	1.72	3.12	1.66	1.21	1.64	24.46	4.91	3.55	2.25	-	11.30	6.90	4.74	2.80	3.01	5.20	1.24
30.	(2)	1.92	2.74	1.43	1.15	1.11	-	5.21	4.64	0.07	-	6.11	2.10	3.97	2.12	2.82	4.65	0.71
31.	(2)	2.47	3.04	4.25	0.69	0.82	-	3.59	5.36	2.78	-	4.32	2.17	5.57	4.41	2.35	7.09	0.97
32.	(2)	3.67	5.04	3.77	1.40	1.15	26.27	9.72	4.49	3.32	3.64	5.36	-	8.55	6.42	3.00	5.31	4.68
33.	(2)	2.47	3.20	1.82	1.05	1.66	21.74	3.36	3.72	0.13	4.65	11.04	1.82	3.70	7.37	1.68	7.79	3.05
34.	(2)	3.33	-	2.40	1.19	0.73	21.31	3.46	3.42	1.22	-	5.10	4.37	3.65	9.80	1.72	5.09	2.96
35.	(2)	4.22	3.10	1.13	3.87	1.71	23.25	4.84	4.36	2.16	-	3.54	0.66	3.13	2.08	2.64	4.64	1.28
36.	(2)	3.34	6.05	1.04	1.87	3.60	22.11	3.63	3.87	0.00	-	3.60	3.04	3.14	4.35	2.55	4.90	4.79
37.	(2)	3.01	4.04	3.08	0.43	1.04	19.48	3.56	3.82	0.11	2.02	3.54	0.63	2.67	5.52	1.66	4.74	0.66
38.	(2)	2.97	2.12	1.56	0.65	1.92	-	5.20	4.01	0.56	2.37	3.77	0.62	2.49	9.11	1.84	-	0.76
39.	(2)	3.43	5.46	6.60	0.77	2.04	21.16	3.52	3.78	0.11	5.01	4.31	-	3.57	2.66	1.84	-	0.99
40.	(3)	5.26	-	-	-	1.20	-	6.47	-	-	-	12.39	-	3.30	-	7.21	-	1.01
41.	(2)	0.51	-	-	-	0.67	-	1.38	-	-	-	6.73	-	1.97	-	4.85	-	0.89
42.	(2)	9.42	4.01	-	6.59	3.93	-	5.59	11.79	-	-	8.38	-	3.75	7.88	3.77	-	3.83
43.	(2)	2.71	1.57	3.04	1.04	0.86	22.23	3.23	5.54	1.93	3.83	8.13	1.48	2.88	4.21	1.00	12.35	0.71
44.	(3)	3.86	8.18	4.66	-	6.23	-	6.44	3.84	-	-	-	-	-	-	7.47	-	3.90
45.	(2)	2.99	8.11	2.55	1.43	5.16	22.70	4.38	3.71	8.93	-	6.44	1.42	3.51	2.09	5.50	5.55	1.78
46.	(2)	5.30	4.21	2.68	7.20	7.04	26.54	8.16	7.36	2.77	-	11.55	3.10	6.67	14.36	-	3.08	6.98
47.	(2)	3.40	3.57	2.99	0.72	2.39	-	1.44	1.83	1.34	-	3.52	5.99	1.00	2.11	0.11	2.78	0.12
48.	(2)	3.09	3.31	2.04	5.06	6.15	18.52	3.03	6.21	1.74	-	16.09	2.89	5.24	3.71	3.20	5.22	1.67
		1.(2)	2.(2)	3.(2)	4.(2)	5.(2)	6.(4)	7.(2)	8.(2)	9.(2)	10.(2)	11.(2)	12.(2)	13.(2)	14.(2)	15.(2)	16.(2)	17.(

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4.(2)	15.(2)	16.(2)	17.(2)	18.(2)	19.(2)	20.(3)	21.(2)	22.(2)	23.(2)	24.(2)	25.(2)	26.(2)	27.(2)	28.(2)	29.(2)	30.(2)	31.(2)	32.(2)	33.(2
3.30																			
14.92	4.76																		
2.31	1.27	4.88																	
6.54	5.71	8.88	N.A.																
-	-	-	18.64	19.21															
3.90	-	-	-	-	-														
3.90	5.78	5.62	3.03	6.17	16.15	N.A.													
5.64	5.32	5.92	7.46	5.45	-	-	-												
3.10	2.50	4.78	1.30	3.40	22.40	-	4.97	N.A.											
3.84	1.42	11.38	0.83	3.39	16.89	-	3.90	6.60	0.41										
-	2.35	-	2.26	-	-	-	5.52	6.48	4.44	3.32									
1.72	2.84	4.48	1.57	4.55	-	-	3.52	5.62	2.08	3.87	2.18								
1.56	2.99	3.78	2.90	3.10	-	-	-	6.76	1.94	3.48	-	3.25							
4.58	-	-	-	-	-	-	-	6.34	1.82	1.65	3.02	-	-						
2.80	3.01	5.20	1.24	4.96	15.50	-	5.15	4.67	1.21	1.12	3.08	1.42	4.58	-					
2.12	2.82	4.65	0.71	5.20	15.74	-	3.92	4.97	0.79	0.36	1.81	5.16	2.92	1.62	3.59				
4.41	2.35	7.09	0.97	-	16.65	-	2.32	5.78	2.04	1.14	1.87	0.17	6.25	4.61	1.09	1.34			
6.42	3.00	5.31	4.68	8.26	25.54	-	3.68	5.90	1.36	3.36	3.35	2.84	5.04	-	7.98	0.95	3.39		
7.37	1.68	7.79	3.05	5.12	15.79	-	2.33	4.90	2.96	0.32	2.62	0.07	3.64	1.56	0.68	0.89	0.69	7.10	
9.80	1.72	5.09	2.96	11.11	16.20	-	3.29	4.27	3.52	0.89	5.68	2.39	-	-	1.12	1.89	-	1.17	0.0
2.08	2.64	4.64	1.28	4.11	15.50	-	2.47	4.57	0.41	0.21	1.97	0.16	3.97	2.52	1.24	2.64	1.33	1.22	1.7
4.35	2.55	4.90	4.79	4.75	16.70	-	-	6.68	4.20	1.92	1.75	0.15	6.04	3.43	2.05	0.31	0.35	1.50	0.4
5.52	1.66	4.74	[illegible]	4.43	15.59	-	3.41	4.00	0.24	0.55	2.84	2.17	2.25	2.04	0.85	4.22	3.64	1.80	0.
9.11	1.84	-	0.77	4.20	16.26	-	2.50	4.29	1.25	0.31	4.71	2.13	2.68	2.18	0.88	2.35	0.96	[illegible]	0.5
2.66	1.84	-	0.99	5.02	-	-	4.18	3.77	0.29	0.84	1.57	0.87	2.40	-	1.32	2.48	1.20	1.68	0.
-	7.21	-	1.01	-	16.95	-	-	-	-	-	-	-	-	-	2.34	0.70	-	3.73	3.
-	4.85	-	0.99	-	6.53	-	-	-	-	-	-	-	-	-	1.09	0.40	-	2.06	2.
7.88	3.77	-	2.53	5.36	-	-	-	5.59	3.65	-	-	-	-	-	3.35	7.73	4.11	4.19	3.
4.21	1.00	12.35	0.71	7.42	17.26	8.09	5.87	-	1.35	1.74	4.08	0.51	3.80	1.66	1.13	0.94	0.51	1.35	1.
-	7.47	-	3.90	9.37	-	-	-	3.85	3.95	-	-	-	-	-	6.00	3.58	-	11.57	3.
2.00	5.50	5.55	1.78	4.32	-	-	-	3.76	3.25	3.72	2.77	-	3.29	-	1.86	3.56	4.88	11.05	2.
14.36	-	3.08	6.98	11.87	-	-	8.76	8.71	7.35	4.87	-	6.74	4.43	-	6.99	6.11	6.73	12.17	6.
2.11	0.11	2.78	0.12	2.37	-	-	-	4.97	1.22	0.44	-	0.07	-	-	0.61	1.02	2.34	1.77	0.
3.71	3.20	5.22	1.67	3.74	-	-	2.52	2.45	1.42	2.13	-	2.02	2.81	-	2.28	1.70	2.41	7.74	2.
14.(2)	15.(2)	16.(2)	17.(2)	18.(2)	19.(2)	20.(3)	21.(2)	22.(2)	23.(2)	24.(2)	25.(2)	26.(2)	27.(2)	28.(2)	29.(2)	30.(2)	31.(2)	32.(2)	33

30.(2)	31.(2)	32.(2)	33.(2)	34.(2)	35.(2)	36.(2)	37.(2)	38.(2)	39.(2)	40.(3)	41.(2)	42.(2)	43.(2)	44.(3)	45.(2)	46.(2)	47.(2)	48.(
1.34																		
0.95	3.39																	
0.89	0.69	7.10																
1.89	-	1.17	0.08															
2.64	1.33	1.22	1.72	0.23														
0.31	0.35	1.50	0.44	2.22	0.59													
4.22	2.64	1.80	0.66	1.74	0.72	0.39												
2.05	0.96	[illegible]	0.58	1.21	3.42	0.35	N.A.											
2.48	1.20	1.08	0.46	2.38	0.52	0.51	N.A.	N.A.										
0.70	-	3.78	3.15	0.29	1.06	4.17	-	-	0.87									
0.40	-	[illegible]	2.12	0.08	1.11	2.64	-	-	0.07	N.A.								
7.73	4.11	4.19	3.33	7.26	7.03	6.64	4.74	5.00	6.72	N.A.	N.A.							
0.94	0.61	1.35	1.04	2.07	0.48	3.74	1.10	1.40	1.00	N.A.	N.A.	N.A.						
3.53	-	11.57	3.88	-	3.32	5.12	4.03	-	-	-	-	-	2.59					
3.56	4.88	11.05	2.50	1.82	2.99	2.09	1.91	1.41	2.66	-	-	2.91	1.94	N.A.				
6.11	6.73	12.17	6.18	5.26	6.92	6.02	7.15	7.27	-	-	-	2.88	5.46	5.71	5.25			
1.02	2.24	1.77	0.30	2.43	1.38	4.42	0.74	0.23	4.26	-	-	-	3.12	-	0.30	1.96		
1.70	2.41	7.74	2.40	2.16	2.80	2.06	1.79	3.05	3.38	4.18	4.08	2.86	3.74	4.22	3.60	7.88	0.73	
30.(2)	31.(2)	32.(2)	33.(2)	34.(2)	35.(2)	36.(2)	37.(2)	38.(2)	39.(2)	40.(3)	41.(2)	42.(2)	43.(2)	44.(3)	45.(2)	46.(2)	47.(2)	48.(

Results of the H-Tes
by Graduate Instit
to a 48 x 48 Matri

Variable Number		1.(2)	2.(2)	3.(2)	4.(2)	5.(2)	6.(4)	7.(2)	8.(2)	9.(2)	10.(2)	11.(2)	12.(2)	13.(2)	14.(2)	15.(2)	16.(2)	17.(2)
1.	(2)																	
2.	(2)	2.39																
3.	(2)	1.80	5.24															
4.	(2)	9.76	1.01	0.83														
5.	(2)	1.89	3.86	3.24	1.17													
6.	(4)	17.74	19.21	-	-	24.03												
7.	(2)	2.47	2.42	1.41	5.71	2.41	-											
8.	(2)	5.59	5.39	5.88	2.47	2.83	-	N.A.										
9.	(2)	1.31	3.35	1.46	1.08	1.40	-	8.86	1.14									
10.	(3)	-	-	-	4.58	-	-	8.42	1.14									
11.	(2)	6.92	4.36	4.99	5.44	8.76	-	7.26	7.60	4.11	6.56							
12.	(2)	2.57	1.24	1.21	0.59	1.67	-	1.55	2.39	1.97	-	3.53						
13.	(2)	6.75	6.69	16.08	9.61	5.44	-	5.60	7.35	2.54	-	7.74	9.18					
14.	(2)	2.45	2.28	3.84	6.96	1.64	-	5.96	11.06	1.68	-	14.99	1.05	8.36				
15.	(2)	1.87	2.93	2.91	4.10	4.54	24.87	3.48	4.53	1.57	-	7.33	1.60	5.90	4.18			
16.	(2)	1.34	3.34	6.01	2.41	2.19	-	5.43	5.24	1.93	-	9.42	2.96	9.62	9.97	3.37		
17.	(2)	1.70	2.42	0.26	1.81	0.20	22.51	2.53	2.49	0.26	3.24	7.00	1.77	6.25	2.29	0.49	2.17	
18.	(2)	3.82	3.77	2.34	5.97	2.93	-	4.08	4.25	1.05	-	8.81	3.31	9.35	3.88	3.12	7.10	N.A.
19.	(2)	15.52	-	-	-	20.16	-	-	-	9.04	-	23.75	-	-	-	-	-	20.33
20.	(3)	-	-	-	-	-	-	-	-	-	-	-	-	-	3.74	-	-	-
21.	(2)	5.10	2.77	-	-	6.96	-	2.74	3.79	0.24	-	8.57	-	8.69	3.09	8.90	1.97	2.54
22.	(2)	3.92	5.89	7.45	6.52	3.39	-	4.67	7.35	4.96	3.94	11.47	4.02	5.50	3.20	3.85	5.46	6.68
23.	(2)	1.88	3.61	1.09	2.40	1.88	-	3.59	5.17	1.47	2.12	10.24	0.90	6.89	2.52	1.50	2.91	0.75
24.	(2)	2.32	4.30	6.20	6.28	1.72	-	4.74	1.75	0.95	-	3.64	0.26	6.77	4.19	0.13	7.19	0.96
25.	(2)	-	4.58	4.37	-	-	-	4.93	4.65	-	-	4.18	-	-	-	1.27	-	2.06
26.	(2)	1.15	3.95	3.75	2.63	0.82	-	4.00	1.98	0.32	-	6.72	-	-	1.22	0.19	2.97	3.60
27.	(2)	3.83	7.54	2.34	0.64	1.77	-	1.05	-	-	-	-	0.89	3.50	1.07	2.19	1.38	0.92
28.	(2)	-	3.66	-	4.16	-	-	-	3.37	-	-	-	3.87	-	5.36	-	-	-
29.	(2)	1.26	2.61	0.75	1.48	1.18	20.81	2.96	2.62	0.95	-	11.05	5.76	6.47	2.18	0.51	1.73	0.68
30.	(2)	1.25	2.64	0.67	0.88	0.43	-	2.44	2.56	0.33	-	8.13	1.69	6.55	2.08	1.05	1.53	1.10
31.	(2)	2.14	2.54	0.59	1.10	0.61	-	3.07	2.43	1.32	-	5.09	2.64	8.40	3.31	1.77	3.87	0.73
32.	(2)	4.31	5.35	6.95	3.42	2.52	27.63	8.18	4.54	2.74	5.23	7.48	-	14.96	7.35	2.54	3.75	5.23
33.	(2)	1.58	2.77	0.26	1.66	1.91	22.12	1.64	1.73	0.65	5.55	9.68	0.84	5.92	4.38	0.14	6.43	2.88
34.	(2)	2.38	-	0.87	0.91	2.28	21.86	1.77	2.31	0.63	-	5.32	2.69	5.74	6.21	0.23	1.51	1.34
35.	(2)	1.63	4.42	2.09	6.03	2.83	24.78	4.39	3.83	1.02	-	7.58	1.44	10.49	2.58	1.71	2.91	2.97
36.	(2)	2.30	6.56	0.88	2.50	1.78	23.02	1.87	1.84	0.21	-	5.89	2.57	5.42	7.65	0.33	2.48	6.97
37.	(2)	1.49	2.58	1.06	1.38	0.99	17.76	1.77	1.98	0.17	5.76	5.70	0.62	5.26	3.67	0.36	2.21	0.38
38.	(2)	1.64	1.63	0.31	1.19	1.69	-	2.72	2.04	0.39	6.20	6.64	0.12	5.48	6.82	0.59	-	0.65
39.	(2)	2.25	3.01	3.34	1.27	1.33	18.61	1.64	1.34	0.34	11.01	5.52	-	6.10	1.72	0.21	-	0.27
40.	(3)	6.09	-	-	-	2.06	-	6.51	-	-	-	12.33	-	8.98	-	6.60	-	2.45
41.	(2)	1.62	-	-	-	0.59	-	3.01	-	-	-	4.40	-	5.34	-	6.11	-	2.24
42.	(2)	6.38	2.12	-	3.51	1.31	-	3.31	10.37	-	-	7.18	-	2.72	2.66	3.16	-	1.59
43.	(2)	0.79	0.40	4.86	1.22	0.16	19.81	1.40	3.36	0.32	2.76	6.55	2.64	6.24	2.98	2.53	8.47	0.36
44.	(3)	1.80	7.36	6.31	-	4.89	-	5.57	3.80	-	-	-	-	-	-	9.05	-	4.13
45.	(2)	1.42	7.00	3.36	2.80	4.47	23.27	5.04	2.81	8.41	-	5.92	1.23	4.92	1.62	8.26	4.65	1.74
46.	(2)	2.25	4.71	2.54	3.18	4.34	23.85	4.26	2.93	0.75	-	10.18	1.01	3.25	11.55	-	1.25	4.22
47.	(2)	3.63	5.85	2.94	1.53	1.61	-	1.13	1.51	1.71	-	4.90	10.57	4.78	3.01	1.35	2.44	0.95
48.	(2)	3.62	5.40	4.26	6.51	6.21	19.65	3.56	7.13	1.09	-	17.07	3.46	7.21	3.36	4.76	3.00	2.87
		1.(2)	2.(2)	3.(2)	4.(2)	5.(2)	6.(4)	7.(2)	8.(2)	9.(2)	10.(3)	11.(2)	12.(2)	13.(2)	14.(2)	15.(2)	16.(2)	17.(2)

Results of the H-Test for Production of Researchers
by Graduate Institutions of Education According
to a 48 x 48 Matrix of Institutional Variables.

14.(2)	15.(2)	16.(2)	17.(2)	18.(2)	19.(2)	20.(3)	21.(2)	22.(2)	23.(2)	24.(2)	25.(2)	26.(2)	27.(2)	28.(2)	29.(2)	30.(2)	31.(2)	32.(2)
4.18																		
9.97	3.37																	
2.29	0.49	2.17																
3.88	3.12	7.10	N.A.															
-	-	-	20.33	19.58														
3.74	-	-	-	-	-													
3.09	8.90	1.97	2.54	4.37	15.41	N.A.												
3.20	3.85	5.46	6.08	4.82	-	-	-											
2.52	1.50	2.91	0.75	1.96	20.64	-	3.40	N.A.										
4.19	0.13	7.19	0.96	3.04	18.67	-	3.92	5.48	0.29									
-	1.27	-	2.06	-	-	-	5.24	7.06	8.01	2.03								
1.22	0.19	2.97	3.60	2.93	-	-	3.84	6.61	2.23	5.45	2.71							
1.07	2.19	1.38	0.92	1.62	-	-	-	4.83	0.80	2.64	-	0.83						
5.36	-	-	-	-	-	-	-	5.37	2.07	2.60	3.30	-	-					
2.18	0.51	1.73	0.68	2.69	16.17	-	3.24	5.34	0.84	2.04	2.82	1.33	3.56	-				
2.08	1.05	1.53	1.10	2.87	16.28	-	3.62	4.06	1.47	0.05	1.89	2.08	1.03	3.50	2.09			
3.31	1.77	3.87	0.73	-	17.69	-	2.40	4.96	1.90	0.38	1.85	0.53	3.42	4.25	1.09	1.22		
7.35	2.54	3.75	5.23	8.67	25.18	-	4.28	8.14	3.13	6.42	3.27	4.38	4.76	-	6.62	2.56	8.76	
4.38	0.14	6.43	2.88	4.59	16.67	-	1.87	3.80	5.40	0.08	1.24	0.10	2.57	1.91	6.88	0.41	1.27	9.82
6.21	0.23	1.51	1.34	7.68	16.21	-	1.80	3.71	7.38	1.64	9.58	3.79	-	-	1.21	1.70	-	2.43
2.58	1.71	2.91	2.97	4.59	18.19	-	2.84	5.55	2.53	4.12	4.76	1.60	5.64	3.65	2.38	4.32	4.65	4.08
7.65	0.33	2.48	6.97	2.34	19.08	-	-	5.74	2.64	3.34	1.67	0.40	3.54	5.04	2.54	0.53	1.55	3.69
3.67	0.36	2.21	0.38	4.32	14.66	-	2.81	2.94	1.00	0.36	2.36	3.00	1.34	3.46	1.08	4.01	4.43	3.59
6.82	0.59	-	0.65	4.31	15.71	-	1.88	3.07	2.26	0.46	3.34	3.91	1.83	3.69	1.25	2.71	2.04	2.96
1.72	0.21	-	0.27	2.57	-	-	3.69	2.32	1.26	0.27	1.10	0.05	1.72	-	0.75	1.97	0.68	2.54
-	6.60	-	2.45	-	19.13	-	-	-	-	-	-	-	-	-	1.92	1.49	-	4.52
-	6.11	-	2.24	-	8.28	-	-	-	-	-	-	-	-	-	1.71	1.10	-	0.92
2.66	3.16	-	1.59	3.36	-	-	-	2.57	0.83	-	-	-	-	-	1.61	6.58	3.76	4.14
2.98	2.53	8.47	0.36	4.26	16.07	8.49	2.96	3.39	0.88	3.61	1.98	0.59	3.47	2.76	0.59	2.77	0.09	2.90
-	9.05	-	4.13	6.74	-	-	-	4.37	4.54	-	-	-	-	-	4.89	2.59	-	12.87
1.62	8.26	4.65	1.74	3.00	-	-	-	4.36	2.78	6.04	4.00	-	2.50	-	1.72	2.38	6.85	12.68
11.55	-	1.25	4.22	8.60	-	-	6.66	4.06	3.66	1.96	-	2.25	2.19	-	2.62	2.67	4.03	11.79
3.01	1.35	2.44	0.95	1.52	-	-	-	5.10	0.70	0.80	-	0.35	-	-	2.10	2.63	1.90	2.19
3.36	4.76	3.00	2.87	4.04	-	-	4.78	2.95	1.65	3.12	-	2.85	1.92	-	5.96	2.15	2.68	9.62
14.(2)	15.(2)	16.(2)	17.(2)	18.(2)	19.(2)	20.(3)	21.(2)	22.(2)	23.(2)	24.(2)	25.(2)	26.(2)	27.(2)	28.(2)	29.(2)	30.(2)	31.(2)	32.(2)

30.(2)	31.(2)	32.(2)	33.(2)	34.(2)	35.(2)	36.(2)	37.(2)	38.(2)	39.(2)	40.(3)	41.(2)	42.(2)	43.(2)	44.(3)	45.(2)	46.(2)	47.(2)	48.(2)
1.22																		
2.56	8.76																	
0.41	1.27	9.82																
1.70	-	2.43	0.45															
4.32	4.65	4.08	3.06	2.48														
0.53	1.55	3.69	1.77	0.28	2.42													
4.01	4.43	3.59	1.77	2.14	1.98	0.31												
2.71	2.04	2.96	1.43	1.82	4.20	0.66	N.A.											
1.97	0.68	2.54	0.10	1.51	1.79	0.43	N.A.	N.A.										
1.49	-	4.52	3.09	1.37	1.33	2.94	-	-	2.33									
1.10	-	0.92	2.62	1.07	1.12	3.06	-	-	1.13	N.A.								
6.58	3.76	4.14	1.98	4.41	2.94	3.25	2.41	3.09	4.15	N.A.	N.A.							
2.77	0.09	2.90	2.10	4.09	3.10	2.95	0.58	0.72	0.16	N.A.	N.A.	N.A.						
2.59	-	12.87	2.79	-	3.75	5.23	6.23	-	-	-	-	-	3.74					
2.38	6.85	12.68	1.95	2.37	3.14	2.74	2.36	2.30	1.05	-	-	1.40	1.83	2.67				
2.67	4.03	11.79	2.35	1.44	4.55	1.89	3.17	3.47	-	-	-	0.59	3.13	4.29	4.23			
2.63	1.90	2.19	0.57	0.81	3.36	6.72	0.64	0.91	2.37	-	-	-	0.74	-	0.59	0.80		
2.15	2.68	9.62	6.71	2.25	4.82	3.86	1.96	5.30	2.25	6.15	4.21	2.68	3.17	3.16	7.61	6.71	0.84	
30.(2)	31.(2)	32.(2)	33.(2)	34.(2)	35.(2)	36.(2)	37.(2)	38.(2)	39.(2)	40.(3)	41.(2)	42.(2)	43.(2)	44.(3)	45.(2)	46.(2)	47.(2)	48.(2)

Summary of the significant results for Matrix C-1

According to a 48 x 48 matrix of institutional variables, significance for production of researchers by graduate institutions of education occurs under 192 sets of conditions. A set means one institutional variable appears with another to yield significance. (The .05 level of significance is used.) Of the 48 variables, 40 appear with another variable at least once to yield significant results. Fifty-two percent of the 192 sets of conditions are provided by eight variables. The remaining 93 conditions are explained by 32 variables whose frequencies for yielding significant sets of conditions range from one to seven. Table C-1 provides data for the eight institutional variables that may be considered relatively important in discussing production of researchers that is operationally defined as the number of doctoral recipients who upon the receipt of the doctorate entered positions where research was the primary activity.

The summary of the results for Matrix C-2 is presented in chapter three of the report (Table 3.13). For comparisons of the variables considered relatively important for production of researchers, according to each operational definition of the measure, the reader is referred to this table (page 67 of the text of the report).

TABLE C.1.--The rank order of eight variables that provide 52 percent of the 192 sets of conditions that yield significance for production of researchers by graduate institutions of education according to the frequency of their occurrence with other variables.*

Rank Order	Institutional Variable	Number of Times the H-Test Yields Significance for Production of Researchers
1.	An index of research quality.	21
2.	Level of admission to the graduate program.	18
3.	A scale of university reputation.	17
5.	Proportion of the graduate faculty doing research.	9
5.	Institutional setting for obtaining data for the dissertation.	9
5.	Level of agreement: low standards for acceptance of research articles in journals are a hindrance to the advancement of educational research.	9
7.5	Size of the social unit: proportion of doctoral degrees administered by the university in the academic year of 1962-63 that represent the doctorate in education.	8
7.5	A research index of interdisciplinary relations.	8

*Production is defined as the number of 1964 recipients who upon the receipt of the degree entered positions where research was the primary activity.

Footnotes to Appendix C

1. In some situations, if one of the k samples had no cases, the H-Test was still performed. However, the degrees of freedom used were the same as if all k samples were represented. If the computed value of H was still equal to or greater than the tabled value of Chi-Square, significance was noted. Such a situation only occurred for the following variables:
   (1) Keniston's scale of university reputation x range of research topics, Var. 6 (4) x Var. 48 (2) of Matrix C-1 and of Matrix C-2;
   (2) index of research quality x type of degree offered (for all 3 degree-administering situations as well as for the Ph.D. only vs. the Ed.D. only): Var. 19 (2) x Var. 40 (3) and Var. 19 (2) x Var. 41 (2) of both Matrix C-1 and Matrix C-2.

   Also, it is noted that only in a few situations where significant results occurred were any of the k samples represented by an N between 4 and 6.

APPENDIX D

Results for Production of Researchers by Educational Research Organizations According to a 48 x 48 Matrix of Organizational Variables. Production Defined as Proportion of Doctoral Recipients over the Past Three Years Who had Worked in the Organization and Who upon the Receipt of the Degree Entered Positions Where Research is the Primary Activity.

Since all results for production of researchers by research organizations are not presented or discussed in chapter five of the text, a summary of the results, according to the organizational characteristics, is given.

The following information is presented in the 48 x 48 matrix.

1. There are two major classes of organizational variables with each having three sub-categories; namely, external characteristics of inputs, outputs and environment and internal characteristics of social structure, attitudes and activities.
2. Under each sub-category there is a listing of the specific variables. After each variable is a number in parentheses which designates the number of categories of the variable; e.g., the variable, implied control (2), is dichotomized: affiliated with a particular department vs. not affiliated.
3. The value in each cell of the matrix represents the computed value of the test statistic, H. If an asterisk is beside the value, then significance at the .05 (or below) level occurred.

If a cell in the matrix has a dash (-), this means that the N's of one or more k samples were ≤ 3 and the H-Test was not performed.

Since H is distributed approximately as Chi-Square with k-1 degrees of freedom, then the degrees of freedom for each cell of the matrix can be determined for any two variables under consideration by multiplying the number of categories of the two variables minus one.

4. Since the name of each variable is rather long, it is deemed necessary to list each variable by a number for the matrix. Below one will find (a) the code number of the variable, (b) the description of the variable, and (c) the source for operationally defining the organizational variable. (Questionnaire items come from the 1965 survey of directors of research organizations and the 1964 institutional surveys of deans and research coordinators of graduate institutions of education. Computed variables have been dichotomized according to the median case or the approximate median case.)

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
External Charac-teristics		
Inputs		
1. (2)	Proportion of doctoral students in education that work with research projects in the unit: high (10-80%) vs. low (0-9%).	Q. 5.3: How many doctoral students in education are working with these research projects? Q. 5.4: Approximately what proportion does this represent of all doctoral students in the school or department of education? _____%
2. (2)	An index of interdisciplinary students in the unit: yes vs. no.	Q. 5.7: Are there any doctoral students from outside of education who are associated with or working in your unit...? No_____ Yes_____
3. (3)	Unit's potential sustainment of research commitment: doctoral recipients remain in the unit: high (≥ 1) vs. low (0) vs. does not apply to situation.	Q. 5.12: Approximately how many of these doctoral students who worked in your unit in the past three years remained in the unit after graduation? _____ Number _____ Does not apply to our situation
4. (2)	Former doctoral students who worked in the unit remained in the unit after graduation: yes (≥ 1) vs. no (0+ does not apply).	Q. 5.12: ...

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
5. (2)	Index of interdisciplinary researchers: proportion of senior researchers associated in the unit that represent an academic department or another professional school within the university: high (1-100%) vs. low (0%).	Q. 6.9: How many of the senior researchers associated with your unit this year are members of Another university? _____ Another professional school within your own university? _____ An academic department within your own university (outside of education)? _____ ÷ Q. 6.3: Number of professional research staff in the unit: _____ Part-time _____ Full-time
6. (2)	Monetary emphasis of the organization: proportion of budget that is for research: high (> 50%) vs. low (≤ 50%).	Q. 7.2: Approximately what proportion of the budget is for research,...? Research _____%
7. (2)	Financing research projects by the source, government (Federal + State): high (51-100%) vs. low (0-50%).	Q. 7.9: In the past fiscal year, which of the following possible sources financed proposals originating with and done by researchers associated with your unit?...(Please estimate the percentage of funds from each source.) % _____ State government _____ Federal government

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
8. (2)	Financing research projects by the research funds of the university and the school of education: high (16-100%) vs. low (0-15%).	Q. 7.9: ... % _____ University research funds _____ School or department of education research funds
9. (2)	Funds earmarked for training or academic programs in the unit: yes vs. no.	Q. 5.9: Are funds earmarked for a training program or for courses and seminars?...
Outputs		
10. (2)	Index of school services by the unit: proportion of checked items on services that represent school services: high (46-100%) vs. low (0-45%).	Q. 4.3: Which of the following services are performed by your unit? (7 of the 16 listed items noted services to school systems.)
Environment		
11. (2)	Index of interdisciplinary relations: arrangements between the research organization and other divisions within the university: high (3-12) vs. low (0-2).	Q. 6.15: There are several ways in which research units may involve faculty members from outside of education. Which of the following arrangements, if any, exist with (1) academic department, and (2) other professional schools;...?

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
12. (2)	Research index of interdisciplinary relations: high (1-6) vs. low (0).	Now exist with: Academic departs. / Professional Schools Joint research appointments ____ ____ Visiting professors from other universities for research ____ ____ Joint research publications ____ ____
13. (2)	Involvement by the graduate faculty in education with plans for new studies conducted in the organization: high (1+ %) vs. low (0%).	Q. 7.5: Over the past three years, approximately what percent of all plans for new studies to be undertaken in your unit originated with the following: % Faculty...of education ____
14. (2)	Type of legal control of university: public vs. private.	Millikan's 1963-1965 catalogue-study.
15. (2)	Level of admission to the graduate program by the graduate institution: proportion of applicants to the graduate program that are accepted.	Q. 1.2: Please provide the following figures for new graduate students in education for the academic year of 1963-64. ____ Applied for admission to graduate school ____ Accepted for admission

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
16. (2)	Formal entrance requirement for admission to the graduate program of the school...of education: no requirement vs. at least one requirement.	Q. 1.3: Is either a teaching certificate or professional experience in the schools a formal requirement for admission to the graduate program?... Teaching certificate _____ Professional experience _____ Neither _____
17. (2)	Proportion of doctoral students working for the Ph.D.: for all 3 degree-administering situations: high (25-100%) vs. low (0-24%).	Q. 1.5: What is the total number of students registered as working for the doctorate?... Ph.D._____ Ed.D._____
18. (2)	Proportion of all graduate courses in education devoted to research methods: high (7-24%) vs. low (0-6%).	Millikan's 1963-1965 catalogue-study.
19. (2)	An index of required interdisciplinary courses: number of departments that offer course work required of doctoral students and are outside the school of education: high (2+) vs. low (0-1).	Q. 1.10: Are any of the courses which are required for doctoral students of education offered only in a department outside the school or department of education. _____Yes _____No IF YES: which departments?_____

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
20. (2)	An index of interdisciplinarily trained faculty: high (9-85%) vs. low (0-8%).	Q. 1.15: About how many faculty members in the graduate school...of education received most of their training for their highest degrees outside of any school...of education? ____ (no.) ÷ Q. 1.14: How many persons are teaching courses to graduate students in the school...of education, either full-time or part-time?... ____ (no.)
21. (3)	Type of graduate preparation emphasized: research alone vs. research plus others vs. non-research.	Q. 2.6: On the whole, which type of preparation receives the greatest emphasis in your graduate school...of education? ____ For research ____ For college teaching ____ For college administration ____ For public school administration ____ For public school teaching
22. (2)	Type of graduate preparation emphasized: research (alone plus others) vs. non-research.	Q. 2.6: ...

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
23. (2)	Research index of interdisciplinary relations the graduate institution of education has with other divisions in the university: high (1-4) vs. low (0).	Q. 2.8: Interchange between schools or departments of education and other divisions in the university are achieved in a variety of ways. Which of the following arrangements now exist with (1) academic departments and (2) other professional schools in the university;...? Now exists with Academic depart. — Professional schools (1) joint research appointments (2) visiting professors from other universities for research
24. (3)	Type of program for training in research provided by the graduate institution: special program vs. part of the regular degree program vs. no program.	Q. 3.20: Is there a training program for people who want to make research a career? If so, what is the title, and what are the main features of this program?
25. (2)	Existence of a program for training in research in the graduate institution: yes (specific + part of degree program) vs. no program.	Q. 3.20: ...

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
26. (II)	Level of faculty participation in research for the graduate institution: high (37-100%) vs. low (0-36%).	Q. 8.2: How many faculty members in the graduate school...of education not associated with a bureau are presently doing research;... + Q. 6.3: Number of professional research staff in the unit: _____ Part-time _____ Full-time (IF senior researchers associated with the unit were members of a department outside the school ...of education, Q. 6.9, the number was subtracted from the total given in Q. 6.3 in order to obtain only the number of researchers exclusively from the school or department of education.) ÷ Q. 1.14: How many persons are teaching...in the (graduate) school...of education...?_____ (no.)
27. (II)	Primary responsibility of the graduate faculty: three groups in the graduate institution of education that the dean estimates to rank research as first responsibility: high (1-3) vs. low (0).	Q. 2.4: Graduate schools...of education vary according to the rank order of field service, teaching, and research as responsibilities of the faculty.... To the best of your knowledge, how would the groups listed below rank the three activities in your school? (Rank 1 to 3 for each person or group with 1 as most important.) Groups Department chairmen Education faculty members Yourself (dean)

Variable Code Number:	Variable	Questionnaire Item of the Institutional Survey
28. (II)	Index of research quality: mentioned vs. not mentioned.	Q. 9.10: Which graduate schools...of education in the nation are doing what you [dean] consider to be most competent and worthwhile research?
Internal Characteristics: Social Structure:		
29. (II)	Implied control in the organization: affiliated vs. not affiliated.	Q. 2.7: Is your unit affiliated with any particular department, program, or division within the school of education? IF YES: In what ways...?
30. (II)	Level of research participation by the faculty in the unit: proportion of faculty in the unit whose teaching load is reduced according to full-time equivalent: high (16-75%) vs. low (0-15%). (Full-time equivalencies obtained by multiplying the number of persons by the mid-point of each of the four percentage-ranges.)	Q. 2.12: Among all those on the faculty who are doing research in association with your unit, about how many have their teaching load reduced by the following proportions for the purpose of doing research? ____ 1-33% ____ 34-50% ____ 51-99% ____ 100% ÷ Q. 6.3a + Q. 6.3b: ...

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
331. (IB)	Level of facilitation: proportion of the faculty in the organization that are not staff members but have their research facilitated by the unit: no facilitating (0%) vs. low (1-67%) vs. high (68-99%).	Q. 6.3b: ... Number of faculty members (non-staff) whose research is facilitated by the unit: ____ (no.) ÷ Q. 6.3b + Q. 6.3a: Number of professional research staff in the unit: ...
332. (IB)	Level of facilitation: proportion of the faculty in the unit....have their research facilitated....: no facilitating vs. facilitating.	Q. 6.3b: ... ÷ Q. 6.3b + Q. 6.3a: ...
333. (IB)	Specialization of the two degrees: yes vs. don't know vs. no.	Q. 8.1: There are several issues pertaining to the graduate program in education....Each of the following statements takes a position on one of the issues. Indicate the extent to which you agree or disagree with each statement... c. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.
334. (IB)	Training for a career in education research should be received outside the school of education: yes vs. don't know vs. no.	Q. 8.1: ... j. Persons who wish to make a career of educational research should receive most of their training from professors in the behavioral sciences outside schools of education.

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
35. (2)	Quality of research training provided in graduate schools...of education is a hindrance...: yes *vs*. no.	Q. 8.3: The following is a list of factors that some people claim have hindered the advancement of educational research. *If you think* any of these has hindered educational *research*,...check...appropriate box. (Leave blank if you think it has *not* hindered research.) Major Hindrance Minor Hindrance
36. (2)	Lack of interest in educational research on the part of behavioral scientists outside schools of education is a hindrance...: yes *vs*. no.	Q. 8.3: ...
Activities		
31. (2)	Range of research topics: the number of substantive areas on which research is being conducted: large (6-21) *vs*. small (1-5).	Q. 4.1: In which of the following areas, if any, is research now being undertaken in your unit?...
38. (2)	Type of research topics on which research is being conducted: diversified *vs*. highly specialized.	Q. 4.2: Some units are highly specialized *while* others try to do research on a wide range of topics. Would you say your unit is equally concerned with several areas or that it is specialized?...

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
39. (3)	Type of research projects being performed in the unit: by single investigators only vs. by research teams only vs. by both single investigators and teams.	Q. 6.6: How many projects are being conducted by a single investigator (excluding students), and...research teams composed of two or more professional persons? ____ Single investigators ____ Research teams
40. (2)	Proportion of projects that have students with them: high (100%) vs. low (0-99%).	Q. 5.2: How many research projects associated with your unit have doctoral students in education as assistants,...? ____ (no.) ÷ Q. 6.6: ....
41. (3)	Type of program for training in research provided by the unit: specific program vs. "get-around policy" vs. "hire-leave policy."	Q. 5.1: Which of the following statements is most applicable to your unit? ____ There is a training program, allowing students to be moved from project to project as best suits their abilities and needs. ____ Although there is not a training program, students manage to get around to various projects. ____ Students are hired to do specific tasks and tend to leave the unit as soon as their job is completed.
42. (2)	Existence of a program for training in research: yes (specific program) vs. no ("get-around + hire-leave policies").	Q. 5.1: ...

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
43. (3)	Academic programs offered in the unit: seminars only vs. courses only vs. both seminars and courses vs. none.	Q. 5.8: During this year does the unit as such offer seminars or courses in methods and techniques of research with or without credit? Seminars ____ Courses ____ Neither ____
44. (2)	Types of academic programs in the unit for training in research: yes (seminars; courses; or both) vs. no program.	Q. 5.8: ...
45. (3)	Academic credit given for the academic program offered by the unit: yes vs. no vs. no academic program.	Q. 5.8c: Is credit given toward either a degree or certification?
46. (2)	Use of the organization by doctoral students in education to obtain data for the dissertation: proportion of doctoral students writing their dissertation who use the organization: high (20-100%) vs. low (0-19%).	Q. 5.6: How many doctoral students in the school...of education are using data or facilities of your unit in preparing their doctoral dissertations? ÷ Q. 1.6: How many students are currently working on their doctoral dissertations in the school...of education? ____ (no.)
47. (2)	Commitment to the training of future researchers: yes vs. no.	Q. 3.1: Directors...often perform a variety of roles. From the following list of activities please check those in which you are engaged,... ____ Providing opportunities for students to participate in research.

Variable Code Number	Variable	Questionnaire Item of the Institutional Survey
48. (2)	Research involvement by the director: longest period of time in which research was the primary activity: long (>24 months) vs. short (0-24 months).	Q. 9.16: Aside from the work on your dissertation, what has been the longest period of time during which research was your primary activity? ____ At no time... ____ 1 to 6 months ____ 7 to 12 months ____ 13 to 24 months ____ more than 24 months

Matrix D

Results of the H-Test for Production of Researchers by Research Organizations According to a 48 x 48 Matrix of Organizational Variables.

D18

Results of the H-Test f
Organizations According to

Variable Number		1.(2)	2.(2)	3.(3)	4.(2)	5.(2)	6.(2)	7.(2)	8.(2)	9.(2)	10.(2)	11.(2)	12.(2)	13.(2)	14.(2)	15.(2)	16.(2)	17.
1.	(2)																	
2.	(2)	7.62																
3.	(3)	-	14.81															
4.	(2)	-	9.47	N.A.														
5.	(2)	3.28	6.32	6.22	4.84													
6.	(2)	4.12	5.74	-	-	2.96												
7.	(2)	4.74	8.08	-	5.56	3.43	3.52											
8.	(2)	0.61	5.32	-	4.30	1.43	2.95	2.66										
9.	(2)	-	8.04	-	-	-	-	-	-									
10.	(2)	5.26	16.29	11.08	5.20	3.55	1.91	6.10	3.18	-								
11.	(2)	0.35	7.49	3.42	2.88	0.85	7.57	3.06	4.53	-	3.54							
12.	(2)	2.68	6.01	6.98	6.61	-	4.75	3.59	2.28	-	3.32	N.A.						
13.	(2)	2.42	5.35	5.58	3.95	1.23	8.22	2.66	1.30	-	1.44	1.32	1.50					
14.	(2)	3.65	5.86	7.70	7.12	2.28	3.18	3.53	2.62	-	2.70	1.43	2.03	0.97				
15.	(2)	-	7.57	-	-	0.18	1.79	-	-	0.55	8.30	0.87	0.87	0.94	-			
16.	(2)	3.02	6.95	-	-	2.71	3.35	-	2.67	-	6.06	4.46	4.03	1.77	3.80	-		
17.	(2)	4.88	-	4.79	4.33	1.27	1.95	2.05	2.14	-	4.54	1.26	1.83	-	0.58	-	-	
18.	(2)	0.93	6.04	-	4.94	4.49	1.97	2.79	0.54	-	3.94	0.98	1.84	0.57	1.00	0.92	2.68	1.
19.	(2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.52	-	
20.	(2)	0.90	4.74	-	3.18	-	2.60	1.67	1.41	-	7.06	2.41	2.60	1.04	0.46	-	3.83	2.
21.	(3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.
22.	(2)	6.49	11.57	-	6.90	3.26	7.16	-	2.44	-	4.62	4.86	-	-	2.75	3.10	-	2.
23.	(2)	-	-	-	-	-	-	-	-	-	2.88	-	-	-	-	-	2.60	
24.	(3)	-	8.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25.	(2)	-	8.39	-	-	-	-	-	-	3.09	-	-	-	-	-	-	-	
26.	(2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27.	(2)	-	13.13	-	4.90	5.76	4.05	3.24	1.15	-	3.96	5.19	6.97	-	2.58	-	3.53	2.
28.	(2)	8.67	11.30	-	-	4.23	6.68	6.09	5.32	-	5.17	5.79	6.02	5.83	8.00	4.44	3.42	5.
29.	(2)	2.47	10.89	5.89	5.55	2.51	1.77	2.91	2.50	-	3.01	1.04	1.80	1.01	1.16	1.30	4.23	2.
30.	(2)	6.43	5.28	7.03	5.98	3.19	-	8.90	3.08	-	4.06	4.08	4.24	2.21	0.91	-	-	
31.	(3)	2.55	-	-	-	3.51	-	6.68	4.61	-	3.44	-	-	-	-	-	4.74	
32.	(2)	1.46	6.92	5.19	5.18	0.88	2.98	4.30	1.87	-	2.56	1.95	1.95	4.15	1.65	-	3.12	0.
33.	(3)	-	6.53	-	-	3.73	-	-	-	-	2.86	3.59	9.05	-	1.61	-	-	1.
34.	(3)	-	-	-	-	-	-	-	-	1.78	-	-	-	-	-	-	-	
35.	(2)	-	-	-	-	-	-	3.86	-	-	-	-	2.21	-	-	1.20	-	
36.	(2)	0.99	5.31	-	-	-	-	2.60	-	-	2.13	1.39	3.13	1.91	1.54	-	2.86	0.
37.	(2)	0.59	6.15	5.55	5.08	1.32	5.21	7.45	4.50	-	3.35	1.00	1.86	9.07	5.92	-	5.42	5.
38.	(2)	0.37	6.30	6.54	6.35	-	2.14	3.35	0.74	-	3.22	0.98	-	-	3.05	-	-	1.
39.	(3)	3.79	12.46	-	-	-	-	10.45	7.51	-	5.14	-	-	-	-	-	9.85	
40.	(2)	1.87	6.26	7.09	6.50	2.19	-	5.77	-	-	1.53	2.42	1.32	0.24	-	-	5.97	6.
41.	(3)	6.49	-	-	-	7.59	5.88	-	6.35	-	9.59	9.76	-	5.27	-	-	-	11.
42.	(2)	4.54	12.62	11.53	7.30	3.42	4.65	8.86	6.17	-	6.77	9.30	-	4.07	5.12	-	-	11.
43.	(3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
44.	(2)	4.42	7.30	6.25	5.01	2.64	2.56	4.87	3.22	-	3.09	2.76	2.31	1.75	3.56	3.69	6.05	6.
45.	(3)	-	7.82	-	5.42	-	-	5.69	12.44	-	-	6.00	3.92	-	-	-	-	
46.	(2)	0.50	2.77	-	-	3.98	2.13	1.51	1.60	-	7.06	8.27	9.12	1.09	0.69	-	-	1.
47.	(2)	-	-	-	-	-	-	-	-	0.34	-	-	-	-	0.61	-	-	
48.	(2)	6.07	7.92	9.88	7.00	4.14	5.73	3.03	2.52	-	6.77	2.52	5.20	2.97	3.05	5.39	3.22	
		1.(2)	2.(2)	3.(3)	4.(2)	5.(2)	6.(2)	7.(2)	8.(2)	9.(2)	10.(2)	11.(2)	12.(2)	13.(2)	14.(2)	15.(2)	16.(2)	17.

Matrix D

Results of the H-Test for Production of Researchers by Research Organizations According to a 48 x 48 Matrix of Organizational Variables.

)	13.(2)	14.(2)	15.(2)	16.(2)	17.(2)	18.(2)	19.(2)	20.(2)	21.(3)	22.(2)	23.(2)	24.(3)	25.(2)	26.(2)	27.(2)	28.(2)	29.(2)	30.(2)	31.(3)	32.
0																				
3	0.97																			
7	0.94	-																		
3	1.77	3.80	-																	
3	-	0.58	-	-																
4	0.57	1.00	0.92	2.68	1.72															
-	-	-	2.52	-	-	-														
0	1.04	0.46	-	3.83	2.38	0.68	-													
-	-	-	-	-	2.94	-	-	-												
-	-	2.75	3.10	-	2.56	2.63	-	2.41	N.A.											
-	-	-	-	2.60	-	2.81	-	-	-	-										
-	-	-	-	-	-	-	-	-	-	-	-									
-	-	-	-	-	-	-	-	-	-	-	2.65	N.A.								
-	-	-	-	-	-	-	-	-	-	-	-	-	-							
7	-	2.58	-	3.53	2.98	4.00	-	3.49	6.79	6.72	-	-	-	-						
2	5.83	8.00	4.44	3.42	5.52	5.87	-	4.12	-	-	-	-	-	-	-					
0	1.01	1.16	1.30	4.23	2.04	1.04	3.20	1.12	-	2.75	1.85	-	-	-	0.54	6.12				
4	2.21	0.91	-	-	-	2.03	-	0.33	-	3.62	-	-	-	-	6.03	8.68	2.97			
-	-	-	-	4.74	-	5.69	-	-	-	-	-	-	-	-	3.76	8.08	-	-		
5	4.15	1.65	-	3.12	0.79	4.50	3.36	0.43	-	3.50	-	-	-	-	0.83	7.90	4.49	4.03	N.A.	
5	-	1.61	-	-	1.77	-	-	-	-	9.78	-	-	-	-	-	-	-	-	-	5.
-	-	-	-	-	-	1.61	-	-	-	-	-	-	-	-	-	-	-	-	-	
1	-	-	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	1.91	1.54	-	2.86	0.51	-	-	-	-	4.47	-	-	-	-	0.68	6.18	2.13	1.94	-	1.
6	9.07	5.92	-	5.42	5.90	2.98	6.10	-	-	5.23	-	7.41	5.06	-	3.85	6.93	2.80	3.28	-	2.
-	-	3.05	-	-	1.81	1.24	-	-	-	4.30	-	-	-	-	6.87	7.18	0.89	2.75	3.80	2.
-	-	-	-	9.85	-	5.12	-	-	-	-	-	-	-	-	5.55	9.57	-	11.02	-	5.
2	0.24	-	-	5.97	6.82	-	-	-	-	-	-	-	-	-	-	8.12	0.85	3.84	-	4.
-	5.27	-	-	-	11.96	6.48	-	-	-	-	-	-	7.34	-	7.44	8.74	8.02	-	-	10
-	4.07	5.12	-	-	11.67	4.38	-	1.70	-	-	-	7.86	7.29	-	3.49	8.49	6.11	1.74	-	7.
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1	1.75	3.56	3.69	6.05	6.65	2.71	6.38	7.13	-	6.50	-	-	-	-	4.08	6.91	2.62	2.83	8.20	2
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.72	-	3.21	-	3
2	1.09	0.69	-	-	1.64	-	-	0.08	-	-	-	-	-	-	-	7.21	2.79	-	-	2
-	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	1.45	-	-	-	-	
0	2.97	3.05	5.39	3.22	-	3.54	-	0.79	-	3.05	-	5.42	4.77	-	2.44	8.85	4.72	2.81	6.75	4
	13.(2)	14.(2)	15.(2)	16.(2)	17.(2)	18.(2)	19.(2)	20.(2)	21.(3)	22.(2)	23.(2)	24.(3)	25.(2)	26.(2)	27.(2)	28.(2)	29.(2)	30.(2)	31.(3)	3

(2)	30.(2)	31.(3)	32.(2)	33.(3)	34.(3)	35.(2)	36.(2)	37.(2)	38.(2)	39.(3)	40.(2)	41.(3)	42.(2)	43.(3)	44.(2)	45.(3)	46.(2)	47.(2)	48.(2)
.97																			
-	-																		
.49	4.03	N.A.																	
-	-	-	5.33																
-	-	-	-	-															
-	-	-	-	2.71	-														
.13	1.94	-	1.65	2.79	-	-													
.80	3.28	-	2.64	4.16	-	1.85	2.64												
.89	2.75	3.80	2.64	-	-	0.17	2.34	3.70											
-	11.02	-	5.50	-	-	-	-	4.44	-										
85	3.84	-	4.14	-	-	-	1.44	1.52	3.12	-									
02	-	-	10.03	-	-	-	-	-	6.53	-	-								
11	1.74	-	7.46	5.22	4.67	-	3.91	15.44	5.54	-	4.88	N.A.							
-	-	-	-	-	-	-	-	-	-	-	-	-	-						
62	2.83	8.20	2.74	3.17	-	-	3.07	3.02	4.68	5.11	2.98	-	5.67	N.A.					
-	3.21	-	3.97	-	-	-	-	-	-	-	-	-	-	-	1.94				
79	-	-	2.96	-	-	-	-	6.41	-	-	-	-	-	-	4.33	-			
-	-	-	-	1.01	-	-	-	-	-	-	-	-	-	-	-	-	0.13		
72	2.81	6.75	4.91	3.49	-	-	4.40	8.16	2.15	6.16	6.19	9.17	7.01	-	3.55	-	0.93	-	
2)	30.(2)	31.(3)	32.(2)	33.(3)	34.(3)	35.(2)	36.(2)	37.(2)	38.(2)	39.(3)	40.(2)	41.(3)	42.(2)	43.(3)	44.(2)	45.(3)	46.(2)	47.(2)	48.(2)

The purpose of the following tables is to give a general overview of the production of researchers by research organizations according to a few external and internal characteristics of the research units. Only the mean proportions for production are given. After each variable listed in a table, the variable number of the institutional characteristic is in parentheses. Thus, the reader can refer to the exact wording of the questionnaire item on which the organizational variable has been defined and which is presented in the first part of the Appendix. Data are based only on research units that have students with them and whose directors provided information for the measure of production and other organizational variables.

TABLE D.1.--Mean proportion for production of [illegible] according to institutional characteristics of inputs.

	Mean Proportion
1. Proportion of doctoral students that work with research projects in the unit (1.):	
High (10-80%)	27.22 (23)
Low (0-9%)	19.35 (17)
2. An index of interdisciplinary students (2.):	
Yes	28.54 (22)
No	13.64 (22)
3. Former doctoral students who worked in the unit remained in the unit after graduation (3.):	
Yes (≥ 1)	35.50 (14)
No (0 + DNA)	17.77 (35)
4. An index of interdisciplinary researchers (5.):	
High (1-100%)	[illegible]
Low (0%)	[illegible]
5. Monetary emphasis of the unit (6.):	
Research [illegible]	[illegible]
Service [illegible]	[illegible]
6. Financing research projects being conducted in the unit by governmental sources (7.):	
High (51-100%)	35.50 (17)
Low (0-50%)	17.24 (21)
7. Financing research projects being conducted in the unit by research funds within the university (8.):	
Low (0-15%)	28.61 (18)
High (16-100%)	22.60 (20)
8. Funds earmarked for a training program or for an academic program (9.):	
Yes	34.88 (8)
No	21.35 (40)

TABLE D.2.--Mean proportion for production of researchers by research organizations according to certain external characteristics of the research units.

	Mean Proportion
1. An index of school services provided by the research unit (10.):	
Low (0-45%)	28.50 (24)
High (46-100%)	16.75 (20)
2. An index of interdisciplinary relations (11.):	
High (3-12)	26.00 (23)
Low (0-2)	20.00 (21)
3. A research index of interdisciplinary relations (12.):	
High (1-6)	27.70 (27)
Low (0)	16.00 (17)
4. Involvement by the graduate faculty in education with the unit (13.):	
Low (0%)	26.15 (26)
High (1+ %)	21.11 (18)

TABLE D.3. Mean proportion for production of researchers [illegible] according to certain organizational characteristics of the graduate institutions to which the research units belong.

		Mean Proportion
1. Type of legal control (14.):	Public	24.50 (34)
	Private	20.00 (15)
2. Level of admission to the graduate program (15.):	Open (77-98%)	21.30 (10)
	Closed (20-76%)	17.47 (19)
3. Formal entrance requirements for admission to the graduate program (16.):	No requirements	23.32 (22)
	≥ 1 requirement	11.36 (14)
4. Proportion of doctoral students working for the Ph.D., for all 3 degree-administering situations (17.):	High (25-100%)	30.05 (21)
	Low (0-24%)	13.15 (16)
5. An index of required interdisciplinary courses (19.):	High (1+)	25.24 (17)
	Low (0)	10.80 (10)
6. An index of interdisciplinarily trained faculty (20.):	High (9-35%)	20.67 (18)
	Low (0-8%)	13.79 (14)
7. Type of graduate preparation emphasized (21.):	Research alone	18.14 (7)
	Research plus others	36.55 (11)
	Non-research	14.83 (18)
8. A research index of interdisciplinary relations (23.):	High (1-4)	23.81 (31)
	Low (0)	13.38 (8)
9. Type of program for training in research (24.):	Special	32.67 (15)
	Part of regular degree program	23.50 (16)
	None	10.75 (8)
10. Proportion of the graduate faculty doing research (26.):	Low (0-36%)	24.14 (7)
	High (37-100%)	12.29 (14)
11. Primary responsibility of the graduate faculty is research (27.):	Low (0)	22.68 (18)
	High (1-3)	21.75 (16)
12. An index of research quality (28.):	Mentioned	30.86 (29)
	Not mentioned	11.90 (20)

TABLE D.4.--Mean proportion for production of researchers by research organizations according to certain internal characteristics of the organization.

	Mean Proportion
1. Implied control on the research unit (29.):	
Affiliated with a department...	26.23 (22)
Not affiliated	20.59 (27)
2. Level of research participation by the faculty in the unit (30.):	
High (16-75%)	29.65 (23)
Low (0-15%)	18.06 (17)
3. Proportion of the faculty in the unit that have their research facilitated by the unit (32.):	
High (1+ %)	27.11 (27)
Low (0%)	18.20 (20)
4. Range of research topics on which research is being conducted (37.):	
Large (6-21)	24.89 (27)
Small (1-5)	20.95 (22)
5. Type of research topics on which research is being conducted (38.):	
Diversified	23.73 (33)
Highly specialized	21.88 (16)
6. Type of research projects being performed in the unit (39.):	
By both single investigators and research teams	27.19 (21)
By research teams only	27.00 (13)
By single investigators only	14.25 (12)
7. Proportion of projects being performed in the unit that have students (40.):	
High (100%)	24.92 (26)
Low (0-99%)	22.60 (15)

TABLE D.5.--Mean proportion for production of researchers by research organizations according to the level of agreement on general educational opinions and problems of educational research perceived by directors of research units.

		Mean Proportion
1. The two types of doctorate in education should be specialized degrees (33.):		
	No	25.86 (14)
	Yes	24.08 (24)
	Undecided	18.70 (10)
2. Most research training should be received outside the school of education (34.):		
	Yes	39.17 (12)
	No	18.34 (32)
	Undecided	17.50 (4)
3. Quality of research training provided in graduate institutions of education is a hindrance...(35.):		
	Yes	23.92 (39)
	No	21.75 (8)
4. Lack of interest in educational research on the part of behavioral scientists outside schools of education is a hindrance...(36.):		
	Yes	26.76 (33)
	No	16.00 (14)

TABLE D.6.--Mean proportion for production of researchers by research organizations according to activities for training in research provided by the unit.

	Mean Proportion
1. Type of program for training in research (41.):	
Systematic apprenticeship program	33.88 (17)
"Hire-leave policy"	21.31 (16)
"Get-around policy"	12.15 (13)
2. Academic programs offered by the unit (43.):	
Courses only	37.00 (3)
Seminars only	29.35 (17)
None	18.83 (23)
Both courses and seminars	15.00 (6)
3. Credit given for the academic program offered by the unit (45.):	
No	27.60 (10)
Yes	26.80 (15)
4. Use of the unit by doctoral students in education to obtain data for the dissertation (46.):	
Low (0-19%)	18.64 (14)
High (20-100%)	16.81 (16)
5. Director perceives one of his responsibilities is to provide opportunities for students to participate in research (47.):	
Yes	23.37 (43)
No	21.33 (6)

APPENDIX E

GENERAL EDUCATIONAL OPINIONS AND PROBLEMS OF EDUCATIONAL RESEARCH PERCEIVED BY DEANS OF GRADUATE INSTITUTIONS OF EDUCATION ACCORDING TO CERTAIN ORGANIZATIONAL CHARACTERISTICS

The purpose of the appendix is to present tables on the comparisons of responses by deans of graduate institutions of education, according to the level of agreement on thirteen general educational opinions and problems of educational research and twenty institutional characteristics. The source for the items is the 1964 institutional survey of deans of education by Lazarsfeld and Sieber.

Four of the attitudinal items represent issues pertaining to the graduate program in education which are receiving attention today. Seven items reflect factors that some people claim have hindered the advancement of educational research. One item reflects a measure of the dean's major concern about these hindrances to the advancement of educational research. The measure represents the proportion of items checked as hindrances that are considered major hindrances. The final item is a measure indicating the institution's score for the hiring preference of professors who mostly have done research in the field of education or in a related field.

The twenty organizational characteristics included, among others, a research index of interdisciplinary relations by the graduate institution of education, the existence of an educational research organization in the institution, the type of doctorate in education administered by the institution, the type of program for training in research that is offered by the institution, and the type of graduate preparation emphasized by the school or department of education. For most of the organizational variables, the source of the question has been given in Appendix C. If the questionnaire item of the institutional survey has already been presented, the variable number and the page number of Appendix C will be given after the heading of the table. The reader can thus observe the exact wording of the question addressed to the deans. If the variable has not been presented in Appendix C, then a footnote will give the exact wording of the question and the operational definition of the institutional characteristic.

Table E.1. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, proportion of graduate faculty that received most of their training for their highest degree outside any school or department of education. (Var. 1, p. C3).*

	Proportion of deans according to		
	Index of Interdisciplinarily Trained Faculty		Percent
Attitudinal Item	High(9-85%)	Low (0-8%)	Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	55% (33)	57% (30)	-2%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	73 (33)	80 (30)	-7
3. Schools...of education generally have low prestige within the universities. Agree	58 (33)	57 (30)	1
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	15 (33)	13 (30)	2
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	82 (33)	80 (30)	2
2. Intellectual ability of people doing research in education. Yes	48 (33)	33 (30)	15
3. Low standards for acceptance of research articles in journals Yes	42 (33)	40 (30)	2
4. Lack of recognition and rewards for research accomplishment. Yes	30 (33)	40 (30)	-10
5. Types of services and studies desired by school systems. Yes	61 (33)	66 (30)	-5
6. Lack of interest in research on the part of administrators of schools...of education. Yes	52 (33)	57 (30)	-5
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	70 (33)	50 (30)	20
8. Level of major concern on hindrances...by the dean. High (48-100%)	42 (33)	60 (30)	-18
Hiring Preference: professors who mostly have done research. High (6-11)	55 (31)	40 (30)	15

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.2. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, an index of interdisciplinary relations. (Var. 7, p. C5)*

	Proportion of deans according to Index of Interdisciplinary Relations		
Attitudinal Item	High (7-16)	Low (0-6)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	68% 34)	47% (38)	21%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	68 (34)	82 (38)	-14
3. Schools...of education generally have low prestige within the universities. Agree	62 (34)	50 (38)	12
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	24 (34)	10 (38)	14
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	89 (35)	71 (38)	18
2. Intellectual ability of people doing research in education. Yes	60 (35)	30 (38)	30
3. Low standards for acceptance of research articles in journals. Yes	51 (35)	32 (38)	19
4. Lack of recognition and rewards for research accomplishment. Yes	34 (35)	37 (38)	-4
5. Types of services and studies desired by school systems. Yes	68 (35)	61 (38)	7
6. Lack of interest in research on the part of administrators of schools...of education. Yes	57 (35)	53 (38)	4
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	68 (35)	55 (38)	13
8. Level of major concern on hindrances...by the dean. High (48-100%)	57 (35)	47 (38)	10
Hiring Preference: professors who mostly have done research. High (6-11)	70 (33)	30 (37)	40

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E. 3. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, a research index of interdisciplinary relations. (Var. 8, p. C5)*

	Proportion of deans according to Research Index of Interdisciplinary Relations		Percent
Attitudinal Item	High (1-4)	Low (0)	Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	74% (38)	39% (34)	35%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	69 (38)	82 (34)	-13
3. Schools...of education generally have low prestige within the universities. Agree	58 (38)	53 (34)	5
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	34 (38)	10 (34)	24
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	77 (39)	82 (34)	-5
2. Intellectual ability of people doing research in education. Yes	51 (39)	35 (34)	16
3. Low standards for acceptance of research articles in journals. Yes	49 (39)	32 (34)	17
4. Lack of recognition and rewards for research accomplishment. Yes	41 (39)	29 (34)	12
5. Types of services and studies desired by school systems. Yes	66 (39)	62 (34)	4
6. Lack of interest in research on the part of administrators of schools...of education. Yes	62 (39)	47 (34)	15
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	64 (39)	59 (34)	5
8. Level of major concern on hindrances...by the dean. High (48-100%)	62 (39)	41 (34)	21
Hiring Preference: professors who mostly have done research. High (6-11)	57 (37)	38 (34)	19

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.4.--Comparisons of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, jurisdiction over the doctoral program. (Var. 10, p. C6).*

Proportion of deans according to

	Jurisdiction over the Doctoral Program		
Attitudinal Item	School... of Education	Graduate School	Both
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	85% (13)	53% (51)	38% (8)
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	92 (13)	70 (51)	88 (8)
3. Schools...of education generally have low prestige within the universities. Agree	85 (13)	49 (51)	50 (8)
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	23 (13)	14 (51)	25 (8)
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	93 (14)	73 (51)	100 (8)
2. Intellectual ability of people doing research in education. Yes	57 (14)	41 (51)	38 (8)
3. Low standards for acceptance of research articles in journals. Yes	57 (14)	35 (51)	50 (8)
4. Lack of recognition and rewards for research accomplishment. Yes	36 (14)	39 (51)	12 (8)
5. Types of services and studies desired by school systems. Yes	72 (14)	62 (51)	62 (8)
6. Lack of interest in research on the part of administrators of schools...of education. Yes	64 (14)	53 (51)	50 (8)
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	71 (14)	65 (51)	25 (8)
8. Level of major concern on hindrances... by the dean. High (48-100%)	43 (14)	53 (51)	62 (8)
Hiring Preference: professors who mostly have done research: High (6-11)	58 (12)	47 (49)	40 (10)

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.5. -- Comparison of responses of thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, level of admission to the graduate program. (Var. 11, p. C6).*

Attitudinal Item	Proportion of deans according to Level of Admission: Closed (20-76%)	Open (77-98%)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	71% (28)	47% (30)	26%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	75 (28)	73 (30)	2
3. Schools...of education generally have low prestige within the universities. Agree	57 (28)	50 (30)	7
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	18 (28)	7 (30)	11
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	86 (28)	74 (31)	12
2. Intellectual ability of people doing research in education. Yes	32 (28)	42 (31)	-10
3. Low standards for acceptance of research articles in journals. Yes	32 (28)	45 (31)	-13
4. Lack of recognition and rewards for research accomplishment. Yes	46 (28)	39 (31)	7
5. Types of services and studies desired by school systems. Yes	67 (28)	68 (31)	-1
6. Lack of interest in research on the part of administrators of schools...of education. Yes	64 (28)	52 (31)	12
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	74 (28)	54 (31)	20
8. Level of major concern on hindrances...by the dean. High (48-100%)	54 (28)	45 (31)	9
Hiring Preference: professors who mostly have done research. High (6-11)	52 (29)	36 (28)	16

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.6. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, existence of a research organization affiliated with the graduate institution of education. (Var. 15, p. C 6).*

		Proportion of deans according to Existence of Research Organization		
Attitudinal Item		Yes	No	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	54% (46)	62% (26)	-8%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	72 (46)	81 (26)	-9
3. Schools...of education generally have low prestige within the universities.	Agree	61 (46)	46 (26)	15
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behaviorial sciences outside schools of education.	Agree	15 (46)	29 (26)	-14
Hindrances to the Advancement of Educational Research				
1. The quality of research training provided in graduate schools...of education.	Yes	74 (46)	89 (27)	-15
2. Intellectual ability of people doing research in education.	Yes	39 (46)	52 (27)	-12
3. Low standards for acceptance of research articles in journals.	Yes	48 (46)	30 (27)	18
4. Lack of recognition and rewards for research accomplishment.	Yes	35 (46)	37 (27)	-2
5. Types of services and studies desired by school systems.	Yes	59 (46)	73 (27)	-14
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	56 (46)	52 (27)	4
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	59 (46)	67 (27)	-8
8. Level of major concern on hindrances... by the dean.	High (48-100%)	50 (46)	56 (27)	-6
Hiring Preference: professors who mostly have done research.	High (6-11)	58 (43)	32 (28)	26

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.7. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, proportion of the graduate faculty doing research. (Var. 16, p. C7).*.

Proportion of deans according to

	Proportion of Graduate Faculty Doing Research		
Attitudinal Item	High (37-100%)	Low (0-37%)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	56% (30)	57% (27)	-1%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	67 (30)	87 (27)	-20
3. Schools...of education generally have low prestige within the universities. Agree	59 (30)	47 (27)	12
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	15 (30)	17 (27)	-2
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	78 (30)	83 (27)	-5
2. Intellectual ability of people doing research in education. Yes	44 (30)	37 (27)	7
3. Low standards for acceptance of research articles in journals. Yes	37 (30)	37 (27)	0
4. Lack of recognition and rewards for research accomplishment. Yes	47 (30)	30 (27)	17
5. Types of services and studies desired by school systems. Yes	67 (30)	62 (27)	5
6. Lack of interest in research on the part of administrators of schools...of education. Yes	70 (30)	43 (27)	27
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	67 (30)	60 (27)	7
8. Level of major concern by hindrances ...by the dean. High (48-100%)	52 (30)	57 (27)	-5
Hiring Preference: professors who mostly have done research. High (6-11)	46 (27)	41 (26)	5

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.8. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, primary responsibility of the graduate faculty is research (based on the dean's estimate of the judgment of ten groups). (Var. 17, p. C8).*

		Proportion of deans according to		
		Primary Responsibility: Research		Percent
Attitudinal Item		High (3-10)	(Low (0-2)	Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	60% (30)	55% (40)	5%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	80 (30)	70 (40)	10
3. Schools...of education generally have low prestige within the universities.	Agree	60 (30)	40 (40)	20
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	20 (30)	15 (40)	5
Hindrances to the Advancement of Educational Research				
1. The quality of research training provided in graduate schools...of education.	Yes	83 (30)	75 (40)	8
2. Intellectual ability of people doing research in education.	Yes	53 (30)	35 (40)	18
3. Low standards for acceptance of research articles in journals.	Yes	37 (30)	40 (40)	-3
4. Lack of recognition and rewards for research accomplishment.	Yes	33 (30)	32 (40)	1
5. Types of services and studies desired by school systems.	Yes	69 (30)	58 (40)	11
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	57 (30)	50 (40)	7
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	70 (30)	52 (40)	18
8. Level of major concern on hindrances...by the dean.	High (48-100%)	63 (30)	45 (40)	18
Hiring Preference: professors who mostly have done research.	High (6-11)	59 (29)	41 (39)	18

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.9. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, primary responsibility of the graduate faculty is research (based on the dean's estimate of the judgment of three groups in the school...of education). (Var. 18, p. C8).*

Attitudinal Item	Proportion of deans according to Primary Responsibility: Research High (1-3)	Low (0)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	64% (22)	54% (48)	10%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	77 (22)	73 (48)	4
3. Schools...of education generally have low prestige within the universities. Agree	68 (22)	48 (48)	20
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	18 (22)	17 (48)	1
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	86 (22)	75 (48)	11
2. Intellectual ability of people doing research in education. Yes	55 (22)	38 (48)	17
3. Low standards for acceptance of research articles in journals. Yes	45 (22)	36 (48)	9
4. Lack of recognition and rewards for research accomplishment. Yes	41 (22)	29 (48)	12
5. Types of services and studies desired by school systems. Yes	81 (22)	54 (48)	27
6. Lack of interest in research on the part of administrators of schools...of education. Yes	73 (22)	44 (48)	29
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	64 (22)	58 (48)	6
8. Level of major concern on hindrances... by the dean. High (48-100%)	59 (22)	50 (48)	9
Hiring Preference: professors who mostly have done research. High (6-11)	73 (22)	37 (46)	40

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.10.--Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, an index of research quality of graduate institutions of education. (Var. 19, p. C9).*

		Proportion of deans according to An Index of Research Quality		
Attitudinal Item		Mentioned	Not Mentioned	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	67% (15)	54% (57)	13%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	67 (15)	77 (57)	-10
3. Schools...of education generally have low prestige within the universities.	Agree	60 (15)	54 (57)	6
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	13 (15)	17 (57)	-4
Hindrances to the Advancement of Educational Research				
1. The quality of research training provided in graduate schools...of education.	Yes	81 (16)	79 (57)	2
2. Intellectual ability of people doing research in education.	Yes	56 (16)	40 (57)	16
3. Low standards for acceptance of research articles in journals.	Yes	38 (16)	42 (57)	-4
4. Lack of recognition and rewards for research accomplishment.	Yes	31 (16)	37 (57)	-6
5. Types of services and studies desired by school systems.	Yes	69 (16)	72 (57)	-3
6. Lack of interest in research on the part of administrators of schools... of education.	Yes	69 (16)	51 (57)	18
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	69 (16)	60 (57)	9
8. Level of major concern on hindrances ...by the dean.	High (48-100%)	69 (16)	47 (57)	22
Hiring Preference: professors who mostly have done research:	High (6-11)	79 (14)	40 (57)	39

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.11. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, type of preparation receiving the greatest emphasis in the graduate institutions of education. (Var. 21, p. C9).*

Attitudinal Item		Proportion of deans according to Type of Graduate Participation: Research (alone plus others)	Non-Research	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	69% (16)	55% (53)	14%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	63 (16)	77 (53)	-14
3. Schools...of education generally have low prestige within the universities.	Agree	69 (16)	51 (53)	18
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	18 (16)	17 (53)	1
Hindrances to the Advancement of Educational Research				
1. The quality of research training provided in graduate schools...of education.	Yes	76 (17)	79 (53)	-3
2. Intellectual ability of people doing research in education.	Yes	47 (17)	42 (53)	5
3. Low standards for acceptance of research articles in journals.	Yes	41 (17)	40 53)	1
4. Lack of recognition and rewards for research accomplishment.	Yes	24 (17)	38 (53)	-14
5. Types of services and studies desired by school systems.	Yes	65 (17)	64 (53)	1
6. Lack of interest in research on the part of administrators of schools... of education.	Yes	59 (17)	53 (53)	6
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	65 (17)	58 (53)	7
8. Level of major concern on hindrances ...by the dean.	High (48-100%)	76 (17)	45 (53)	31
Hiring Preference: professors who mostly have done research.	High (6-11)	73 (15)	43 (54)	30

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.12. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, preference to hire professors who mostly have done research in the field of education or a related field. (Var. 22, p. C9).*

Attitudinal Item	Proportion of deans according to Hiring Preference: Research High (6-11)	Low (0-5)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	56% (32)	58% (36)	-2%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	69 (32)	78 (36)	-9
3. Schools...of education generally have low prestige within the universities. Agree	62 (32)	44 (36)	18
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	22 (32)	14 (36)	8
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	79 (33)	78 (36)	1
2. Intellectual ability of people doing research in education. Yes	52 (33)	39 (36)	13
3. Low standards for acceptance of research articles in journals. Yes	45 (33)	31 (36)	14
4. Lack of recognition and rewards for research accomplishment. Yes	36 (33)	36 (36)	0
5. Types of services and studies desired by school systems. Yes	67 (33)	60 (36)	7
6. Lack of interest in research on the part of administrators of schools...of education. Yes	67 (33)	42 (36)	25
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	70 (33)	50 (36)	20
8. Level of major concern on hindrances... by the dean. High (48-100%)	61 (33)	44 (36)	17
Hiring Preference: professors who mostly have done research: High (6-11)	NOT APPLICABLE		

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.13. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, formal entrance requirements for admission to the graduate program. (Var. 37,p. C12).*

	Proportion of deans according to Formal Entrance Requirements				
Attitudinal Item	None		At Least one		Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	62%	(39)	53%	(32)	9%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	85	(39)	66	(32)	19
3. Schools...of education generally have low prestige within the universities. Agree	54	(39)	59	(32)	-5
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	10	(39)	25	(32)	-15
Hindrances to the Advancement of Educational Research					
1. The quality of research training provided in graduate schools...of education. Yes	80	(39)	82	(33)	-2
2. Intellectual ability of people doing research in education. Yes	51	(39)	36	(33)	15
3. Low standards for acceptance of research articles in journals. Yes	41	(39)	42	(33)	-1
4. Lack of recognition and rewards for research accomplishment. Yes	36	(39)	36	(33)	0
5. Types of services and studies desired by school systems. Yes	66	(39)	61	(33)	5
6. Lack of interest in research on the part of administrators of schools...of education. Yes	49	(39)	61	(33)	-12
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	59	(39)	67	(33)	-8
8. Level of major concern on hindrances...by the dean. High (48-100%)	51	(39)	52	(33)	-1
Hiring Preference: professors who mostly have done research. High (6-11)	42	(38)	53	(32)	-11

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.14. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, formal entrance requirements for admission to the graduate program: professional experience. (Var. 39, p. C13).*

Attitudinal Item	Proportion of deans according to Professional Experience is Required: No	Yes	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	60% (52)	53%(19)	7%
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	81 (52)	63 (19)	18
3. Schools...of education generally have low prestige within the universities. Agree	52 (52)	68 (19)	-16
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioural sciences outside schools of education. Agree	10 (52)	37 (19)	-27
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	81 (52)	80 (20)	1
2. Intellectual ability of people doing research in education. Yes	46 (52)	40 (20)	6
3. Low standards for acceptance of research articles in journals. Yes	36 (52)	55 (20)	-19
4. Lack of recognition and rewards for research accomplishment. Yes	33 (52)	45 (20)	-12
5. Types of services and studies desired by school systems. Yes	63 (52)	65 (20)	-2
6. Lack of interest in research on the part of administrators of schools...of education. Yes	52 (52)	60 (20)	-8
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	62 (52)	65 (20)	-3
8. Level of major concern on hindrances...by the dean. High (48-100%)	52 (52)	50 (20)	2
Hiring Preference: professors who mostly have done research. High (6-11)	41 (51)	63 (19)	-22

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.15. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, the type of doctorate in education administered by the institution. (Var. 40, p. C13).*

	Proportion of deans according to Type of Degree Administered		
Attitudinal Item	Ph.D. only	Ed.D. only	Both
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	62% (13)	47% (19)	60% (40)
2. The Ph.D. generally has higher prestige than the Ed.D. Agree	85 (13)	79 (19)	70 (40)
3. Schools...of education generally have low prestige within the universities. Agree	62 (13)	53 (19)	55 (40)
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	15 (13)	16 (19)	18 (40)
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided graduate schools...of education. Yes	92 (13)	68 (19)	80 (41)
2. Intellectual ability of people doing research in education. Yes	46 (13)	32 (19)	49 (41)
3. Low standards for acceptance of research articles in journals. Yes	38 (13)	32 (19)	46 (41)
4. Lack of recognition and rewards for research accomplishment. Yes	46 (13)	42 (19)	29 (41)
5. Types of services and studies desired by school systems. Yes	80 (13)	61 (19)	61 (41)
6. Lack of interest in research on the part of administrators of schools...of education. Yes	62 (13)	47 (19)	56 (41)
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education. Yes	69 (13)	53 (19)	63 (41)
8. Level of major concern on hindrances... by the dean. High (48-100%)	54 (13)	47 (19)	54 (41)
Hiring Preference: professors who mostly have done research. High (6-11)	36 (11)	33 (18)	57 (41)

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.16. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, type of doctorate in education administered by the institution: proportion of doctoral students working for the Ph.D. (Var. 43, p. C13).*

		Proportion of deans according to		
		Proportion of Doctoral Students Working for the Ph.D.		
Attitudinal Item		High (25-100%)	Low (0-24%)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	65% (34)	48% (33)	17%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	76 (34)	79 (33)	-3
3. Schools...of education generally have low prestige within the universities.	Agree	56 (34)	58 (33)	-2
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioural sciences outside schools of education.	Agree	35 (34)	12 (33)	23
Hindrances to the Advancement of Educational Research				
1. The quality of research training provided in graduate schools...of education.	Yes	83 (35)	76 (33)	7
2. Intellectual ability of people doing research in education.	Yes	40 (35)	46 (33)	-6
3. Low standards for acceptance of research articles in journals.	Yes	46 (35)	33 (33)	13
4. Lack of recognition and rewards for research accomplishment.	Yes	34 (35)	43 (33)	-9
5. Types of services and studies desired by school systems.	Yes	66 (35)	62 (33)	4
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	48 (35)	64 (33)	-16
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	63 (35)	61 (33)	2
8. Level of major concern on hindrances...by the dean.	High (48-100%)	51 (35)	52 (33)	-1
Hiring Preference: professors who mostly have done research.	High (6-11)	44 (32)	44 (34)	0

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*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.17. -- Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, type of training program offered for those desiring a career in research. (Var. 45, p. C14).*

		Proportion of deans according to Existence of a Training Program				
Attitudinal Item		Yes (Special + part of degree program)		No		Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	64%	(31)	44%	(34)	20%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	78	(31)	76	(34)	2
3. Schools...of education generally have low prestige within the universities.	Agree	74	(31)	38	(34)	36
4. Persons who wish to make a career of educational research should receive most of their research training from professiors in the behavioral sciences outside schools of education.	Agree	23	(31)	15	(34)	8
Hindrances to the Advancement of Educational Research						
1. The quality of research training provided in graduate schools...of education.	Yes	91	(32)	71	(34)	20
2. Intellectual ability of people doing research in education.	Yes	59	(32)	29	(34)	30
3. Low standards for acceptance of research articles in journals.	Yes	53	(32)	32	(34)	21
4. Lack of recognition and rewards for research accomplishment.	Yes	37	(32)	32	(34)	5
5. Types of services and studies desired by school systems.	Yes	71	(32)	59	(34)	12
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	62	(32)	60	(34)	2
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes:	62	(32)	56	(34)	6
8. Level of major concern on hindrances...by the dean.	High (48-100%)	53	(32)	53	(34)	0
Hiring Preference: professors who mostly have done research.	High (6-11)	53	(30)	48	(33)	5

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.18.--Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, level of apprenticeships on projects being performed outside any research organization. (Var. 47, p. C14).*

	Proportion of deans according to		
	Level of Apprenticeship		Percent Difference
Attitudinal Item	High (.9-88%)	Low (0-.8%)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree. Agree	52% (25)	46% (24)	6%
2. The Ph.D. generally has higher prestige then the Ed.D. Agree	80 (25)	67 (24)	13
3. Schools...of education generally have low prestige within the universities. Agree	56 (25)	50 (24)	6
4. Presons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education. Agree	20 (25)	8 (24)	12
Hindrances to the Advancement of Educational Research			
1. The quality of research training provided in graduate schools...of education. Yes	80 (25)	79 (24)	1
2. Intellectual ability of people doing research in education. Yes	48 (25)	38 (24)	10
3. Low standards for acceptance of research articles in journals. Yes	48 (25)	33 (24)	15
4. Lack of recognition and rewards for research accomplishment. Yes	32 (25)	42 (24)	-10
5. Types of services and studies desired by school systems. Yes	64 (25)	61 (24)	3
6. Lack of interest in research on the part of administrators of schools...of education. Yes	44 (25)	58 (24)	-14
7. Lack of interest in education research on the part of behavioral scientists outside schools of education. Yes	68% (25)	54 (24)	14
8. Level of major concern on hindrances... by the dean. High (48-100%)	52 (25)	46 (24)	6
Hiring Preference: professors who mostly have done research. High (6-11)	44 (23)	38 (24)	6

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.19.--Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, time-period during which research was the dean's primary activity. (Footnote 2).*

		Proportion of deans according to Time-Period Devoted to Research		
Attitudinal Item		Long (≥ 1 month)	Short (at no time)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	65% (24)	49% (37)	16%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	70 (34)	78 (37)	-8
3. Schools...of education generally have low prestige within the universities.	Agree	56 (34)	54 (37)	2
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education	Agree	20 (34)	14 (37)	6
Hindrances to the Advancement of Educational Research				
1. The quality of research training provided in graduate schools...of education.	Yes	83 (35)	76 (37)	7
2. Intellectual ability of people doing research in education.	Yes	51 (35)	35 (37)	16
3. Low standards for acceptance of research articles in journals.	Yes	43 (35)	38 (37)	5
4. Lack of recognition and rewards for research accomplishment.	Yes	37 (35)	32 (37)	5
5. Types of services and studies desired by school systems.	Yes	63 (35)	64 (37)	-1
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	60 (35)	49 (37)	11
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	71 (35)	51 (37)	20
8. Level of major concern on hindrances... by the dean.	High (58-100%)	60 (35)	43 (37)	17
Hiring Preference: professors who mostly have done research.	High (6-11)	53 (34)	44 (34)	9

*Numbers in parentheses represent the base of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Table E.20.--Comparison of responses on thirteen attitudinal items held by deans of graduate institutions of education according to the characteristic, an index of research orientation when the dean defined the term, "educational research." (Footnote 3).*

Proportion of deans according to

		Index of a Research Orientation		Percent Difference
Attitudinal Item		High (58-100%)	Low (33-57%)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	58% (33)	58% (38)	0%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	85 (33)	66 (38)	19
3. Schools...of education generally have low prestige within the universities.	Agree	61 (33)	53 (38)	8
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	21 (33)	13 (38)	8
Hindrances to the Advancement of Educational Research				
1. The quality of research training provided in graduate schools...of education.	Yes	76 (33)	82 (39)	-6
2. Intellectual ability of people doing research in education	Yes	46 (33)	41 (39)	5
3. Low standards for acceptance of research articles in journals.	Yes	33 (33)	49 (39)	-16
4. Lack of recognition and rewards for research accomplishment.	Yes	33 (33)	38 (39)	-5
5. Types of services and studies desired by school systems.	Yes	64 (33)	66 (39)	-2
6. Lack of interest in research on the part of administrators of schools---of education.	Yes	58 (33)	54 (39)	4
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	54 (33)	67 (39)	-13
8. Level of major concern on hindrances ...by the dean.	High (48-100%)	54 (33)	51 (39)	3
Hiring Preference: professors who mostly have done research:	High (6-11)	48 (33)	50 (36)	-2

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Footnotes to Appendix E

1. Source for the variable, hiring preference of professors who mostly have done research, is Q. 2.7 of the institutional survey of deans:

   If an opening occurred for someone to teach a graduate course in each of the major fields listed below, which of the following persons would you *prefer to hire*?

   A range of six types of individuals is offered; namely: a professor trained in a school of education (1) who has mostly *taught* in the field or (2) who has mostly *done research* in the field; a professor trained *outside* a school of education (3) who has mostly *taught* in a related field or (4) who has mostly *done research* in a related field; (5) a school practitioner who has a *great deal of experience* in the field; and (6) no particular preference.

   Eleven major fields in education for a possible opening are listed. They include, among others, educational administration, educational sociology, psychology of learning, and natural sciences and mathematics.

   The institution's score is determined by the number of times the dean checked either category which designates "a professor who mostly has done research." The item is dichotomized according to the median case: high (6-11) *vs.* low (0-5).

2. Source for the variable, time-period devoted to research, is Q. 11.10 of the institutional survey of deans:

   Aside from the work on your dissertation, what has been the longest period of time during which research was your primary activity?

   _____ At no time was research my primary activity
   _____ 1 to 6 months
   _____ 7 to 12 months
   _____ 13 to 24 months
   _____ More than 24 months

   The variable is dichotomized according to the approximate median case.

3. Source for the variable, an index of research orientation when the dean defined "educational research," is Q. 2.1 of the institutional survey:

   Since the term "educational research" is used in a variety of ways, it is often difficult to know what a person means by it. To which of the following kinds of activity do you *ordinarily* apply the term "educational research"?

   (Check as many as you wish)

Four of the listed 12 activities are operationally defined as a research orientation:

(1) evaluating the effectiveness of new curricula and methods;
(2) investigating factors which affect the teaching-learning process in the classroom;
(3) investigating factors which affect school administration; and
(4) general psychological studies of human learning or development.

The score for each dean is determined by the proportion of items checked that represented a research orientation. According to the approximate median case, the variable is dichotomized: high (58-100%) vs. low (33-57%).

APPENDIX F

GENERAL EDUCATIONAL OPINIONS AND PROBLEMS OF EDUCATIONAL RESEARCH PERCEIVED BY DIRECTORS OF RESEARCH ORGANIZATIONS AFFILIATED WITH GRADUATE INSTITUTIONS OF EDUCATION

The purpose of this appendix is to present tables on the comparisons of responses by directors of research organizations, according to the level of agreement on fourteen general educational opinions and problems of educational research and twenty-eight organizational characteristics of the research organizations. The source for the items is the 1965 institutional survey of directors of research organizations by Lazarsfeld and Sieber.

Four of the attitudinal items represent issues about the graduate program in education which are receiving attention today. Seven items reflect factors that some people claim have hindered the advancement of educational research. One item is a measure of the director's major concern about the hindrances; it is operationally defined as a proportion of items checked as hindrances that are considered major hindrances. The last two opinions concern the presence or absence of any difficulties experienced by the director in obtaining qualified students to work on projects in the unit and of any problems in coordinating the unit's training program with the program provided for graduate students in the school or department of education.

The twenty-eight organizational variables include, among others, the proportion of doctoral students in education working in the unit, an index of interdisciplinary students in the unit, level of former doctoral students who worked in the unit that remained in the organization after graduation, proportion of the budget provided for research, an index of school services provided by the unit, a research index of interdisciplinary relations by the unit, a level of admission to the graduate program in the institution to which the research organization belongs, the existence of a program for training in research provided by the unit, and the period of time in which research was the primary activity of the director of the unit.

For most of the organizational variables, the source of the question has been given in Appendix D. If the questionnaire item of the institutional survey has already been presented, the variable number and the page number of Appendix D are given. Thus, the reader can observe the exact wording of the question and the operational definition of the variable. If the variable has not been presented in Appendix D, then a footnote at the end of this appendix gives the exact wording of the question and the operational definition of the organizational characteristic.

TABLE F.1.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, proportion of doctoral students in education that work with research projects in the unit. (Var. 1, p. D3).*

		Proportion of directors according to				
		Proportion of Doctoral Students in the Unit				Percent
Level of Agreement on the Attitudinal Item		High (10-80%)		Low (0-9%)		Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	41%	(22)	50%	(22)	-9%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	68	(22)	77	(22)	-9
3. Schools...of education generally have low prestige within the universities.	Agree	73	(22)	68	(22)	5
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	23	(22)	27	(22)	-4
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	86	(22)	86	(22)	0
2. Intellectual ability of people doing research in education.	Yes	68	(22)	59	(22)	9
3. Low standards for acceptance of research articles in journals.	Yes	36	(22)	50	(22)	-14
4. Lack of recognition and rewards for research accomplishment.	Yes	41	(22)	41	(22)	0
5. Types of services and studies desired by school systems.	Yes	55	(22)	54	(22)	1
6. Lack of interest in research on the part of administrators of schools of education.	Yes	59	(22)	59	(22)	0
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	68	(22)	68	(22)	0
8. Level of major concern on hindrances... by the director.	High (45-100%)	54	(22)	50	(22)	4
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	52	(21)	57	(21)	-5
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	50	(14)	29	(17)	21

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.2.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, an index of interdisciplinary students in the unit. (Var. 2, p. D3).*

		Proportion of directors according to		
		Index of Interdisciplinary Students		Percent Difference
Level of Agreement on the Attitudinal Item		Yes	No	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	46% (24)	52% (23)	-6%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	75 (24)	74 (23)	1
3. Schools...of education generally have low prestige within the universities.	Agree	67 (24)	78 (23)	-11
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	29 (24)	22 (23)	7
Hindrances to the Advancement of Educational Research				
1. The quality of research training provided in graduate schools...of education.	Yes	96 (24)	82 (22)	14
2. Intellectual ability of people doing research in education.	Yes	67 (24)	68 (22)	-1
3. Low standards for acceptance of research articles in journals.	Yes	38 (24)	41 (22)	-5
4. Lack of recognition and rewards for research accomplishment.	Yes	33 (24)	55 (22)	-22
5. Types of services and studies desired by school systems.	Yes	50 (24)	64 (22)	-14
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	67 (24)	54 (22)	13
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	75 (24)	59 (22)	16
8. Level of major concern on hindrances ...by the director.	High (45-100%)	38 (24)	64 (22)	-26
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	56 (23)	56 (23)	0
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	28 (18)	43 (14)	-15

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.3.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, former doctoral students who worked in the unit remained in the unit after graduation. (Var. 4, p. D3).*

		Proportion of directors according to Doctoral Recipients Remain in the Unit		Percent Difference
Level of Agreement on the Attitudinal Item		Yes (≥ 1)	No (0+DNA)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	69% (16)	37% (35)	32%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	88 (16)	63 (35)	25
3. Schools...of education generally have low prestige within the universities.	Agree	75 (16)	66 (35)	9
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	25 (16)	25 (35)	0
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	81 (16)	85 (34)	-4
2. Intellectual ability of people doing research in education.	Yes	50 (16)	71 (34)	-21
3. Low standards for acceptance of research articles in journals.	Yes	38 (16)	41 (34)	-3
4. Lack of recognition and rewards for research accomplishment.	Yes	44 (16)	44 (34)	0
5. Types of services and studies desired by school systems.	Yes	50 (16)	59 (34)	-9
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	63 (16)	59 (34)	4
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	88 (16)	62 (34)	26
8. Level of major concern on hindrances... by the director.	High (45-100%)	62 (16)	41 (34)	17
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	69 (16)	52 (33)	17
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	36 (11)	36 (25)	0

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.4.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, an index of interdisciplinary senior researchers in the unit. (Var. 5, p. D4).*

Level of Agreement on the Attitutinal Item		Proportion of directors according to Index of Interdisciplinary Researchers in Unit: High (1+%)	Proportion of directors according to Index of Interdisciplinary Researchers in Unit: Low (0%)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	38% (26)	50% (28)	-12%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	77 (26)	71 (28)	6
3. Schools...of education generally have low prestige within the universities.	Agree	65 (26)	75 (28)	-10
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	31 (26)	21 (28)	10
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	84 (25)	82 (28)	2
2. Intellectual ability of people doing research in education.	Yes	48 (25)	64 (28)	-16
3. Low standards for acceptance of research articles in journals.	Yes	52 (25)	43 (28)	9
4. Lack of recognition and rewards for research accomplishment.	Yes	36 (25)	46 (28)	-10
5. Types of services and studies desired by school systems.	Yes	44 (25)	54 (28)	-10
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	60 (25)	64 (28)	-4
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	76 (25)	64 (28)	12
8. Level of major concern on hindrances... by the director.	High (45-100%)	40 (25)	68 (28)	-28
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	37 (19)	62 (24)	-25
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	40 (15)	33 (18)	7

*Numbers in parenthese represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.5.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, recruitment-pattern of unit's professional staff in the past three years: behavioral scientists outside any school of education. (Footnote 1).*

		Proportion of directors according to				
		Proportion of Behavioral Scientists Recruited				Percent Difference
Level of Agreement on the Attitudinal Item		High(11-100%)		Low(0-10%)		
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	58%	(24)	50%	(25)	8%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	83	(24)	68	(25)	15
3. Schools...of education generally have low prestige within the universities.	Agree	67	(24)	72	(25)	-5
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	38	(24)	20	(25)	18
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	83	(23)	84	(25)	-1
2. Intellectual ability of people doing research in education.	Yes	48	(23)	72	(25)	-24
3. Low standards for acceptance of research articles in journals.	Yes	43	(23)	52	(25)	-9
4. Lack of recognition and rewards for research accomplishment.	Yes	30	(23)	56	(25)	-26
5. Types of services and studies desired by school systems.	Yes	52	(23)	60	(25)	-8
6. Lack of interest in research on the part of administrators of schools...of education.	Yes	56	(23)	64	(25)	-8
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	83	(23)	68	(25)	15
8. Level of major concern on hindrances... by the director.	High (45-100%)	52	(23)	52	(25)	0
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	58	(19)	57	(21)	1
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	36	(14)	50	(16)	-14

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.6.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, proportion of budget provided for research. (Var. 6, p. D4).*

		Proportion of directors according to		
		Monetary Emphasis of the Unit: Research		Percent Difference
Level of Agreement on the Attitudinal Item		High(> 50%)	Low(≤ 50%)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	61% (28)	31% (26)	30%
2. The Ph.D. generally has higher prestige then the Ed.D.	Agree	75 (28)	73 (26)	2
3. Schools...of education generally have low prestige within the universities.	Agree	75 (28)	65 (26)	10
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	25 (28)	23 (26)	2
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	82 (28)	88 (26)	-6
2. Intellectual ability of people doing research in education.	Yes	54 (28)	69 (26)	-15
3. Low standards for acceptance of research articles in journals.	Yes	46 (28)	50 (26)	-4
4. Lack of recognition and rewards for research accomplishment.	Yes	32 (28)	50 (26)	-18
5. Types of services and studies desired by school systems.	Yes	54 (28)	54 (26)	0
6. Lack of interest in research on the part of administrators of schools of education.	Yes	64 (28)	58 (26)	6
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	86 (28)	58 (26)	28
8. Level of major concern on hindrances... by the director.	High (45-100%)	50 (28)	46 (26)	4
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	64 (22)	50 (20)	14
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	29 (17)	47 (15)	-16

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.7.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, an index of school services provided by the unit. (Var. 10, p. D5).*

		Proportion of directors according to		
		Index of School Services		Percent Difference
Level of Agreement on the Attitudinal Item		Low(0-45%)	High(46-100)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	50% (30)	39% (31)	11%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	80 (30)	68 (31)	12
3. Schools...of education generally have low prestige within the universities.	Agree	73 (30)	68 (31)	5
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	37 (30)	13 (31)	24
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	90 (29)	77 (31)	13
2. Intellectual ability of people doing research in education.	Yes	72 (29)	48 (31)	24
3. Low standards for acceptance of research articles in journals.	Yes	45 (29)	45 (31)	0
4. Lack of recognition and rewards for research accomplishment.	Yes	31 (29)	55 (31)	-24
5. Types of services and studies desired by school systems.	Yes	48 (29)	55 (31)	-7
6. Lack of interest in research on the part of administrators of schools of education.	Yes	66 (29)	58 (31)	8
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	72 (29)	61 (31)	11
8. Level of major concern on hindrances... by the director.	High (45-100%)	45 (29)	58 (31)	-13
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	68 (25)	46 (24)	22
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	31 (16)	45 (20)	-14

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.8.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, an index of interdisciplinary relations by the unit. (Var. 11, p. D5).*

Proportion of directors according to:

Level of Agreement on the Attitudinal Item		Index of Interdisciplinary Relations				Percent Difference
		High (3-12)		Low (0-2)		
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	56%	(27)	39%	(31)	17%
2. The Ph.D. generally has higher prestige then the Ed.D.	Agree	74	(27)	74	(31)	0
3. Schools...of education generally have low prestige within the universities.	Agree	67	(27)	78	(31)	-11
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	33	(27)	19	(31)	14
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	85	(27)	78	(31)	7
2. Intellectual ability of people doing research in education.	Yes	67	(27)	55	(31)	12
3. Low standards for acceptance of research articles in journals.	Yes	48	(27)	48	(31)	0
4. Lack of recognition and rewards for research accomplishment.	Yes	44	(27)	42	(31)	2
5. Types of services and studies desired by school systems.	Yes	56	(27)	48	(31)	8
6. Lack of interest in research on the part of administrators of schools of education.	Yes	67	(27)	55	(31)	12
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	74	(27)	68	(31)	6
8. Level of major concern on hindrances... by the director.	High (45-100%)	41	(27)	58	(31)	-17
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	64	(22)	56	(23)	8
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	26	(19)	47	(17)	-21

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.9.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, a research index of interdisciplinary relations by the unit. (Var. 12, p. D6.*

		Proportion of directors according to Research Index of Interdisciplinary Relations		Percent Difference
Level of Agreement on the Attitudinal Item		High (1-6)	Low (0)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	47% (34)	46% (24)	1%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	74 (34)	75 (24)	-1
3. Schools...of education generally have low prestige within the universities.	Agree	65 (34)	83 (24)	-18
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	29 (34)	21 (24)	8
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	85 (34)	75 (24)	10
2. Intellectual ability of people doing research in education.	Yes	65 (34)	54 (24)	11
3. Low standards for acceptance of research articles in journals.	Yes	47 (34)	50 (24)	-3
4. Lack of recognition and rewards for research accomplishment.	Yes	44 (34)	42 (24)	2
5. Types of services and studies desired by school systems.	Yes	59 (34)	42 (24)	7
6. Lack of interest in research on the part of administrators of schools of education.	Yes	62 (34)	58 (24)	4
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	74 (34)	67 (24)	7
8. Level of major concern on hindrances... by the director.	High (45-100%)	44 (34)	58 (24)	-14
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	61 (28)	59 (17)	2
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	33 (24)	58 (12)	-25

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.10.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, involvement of the graduate faculty in education with plans for new studies conducted in the unit. (Var. 13, p. D6).*

Level of Agreement on the Attitudinal Item		Proportion of directors according to Level of Involvement: Low (0%)		High (1+%)		Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	44%	(32)	46%	(24)	-2%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	78	(32)	62	(24)	16
3. Schools...of education generally have low prestige within the universities.	Agree	76	(32)	75	(24)	1
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	34	(32)	12	(24)	22
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	75	(32)	96	(24)	-21
2. Intellectual ability of people doing research in education.	Yes	56	(32)	58	(24)	-2
3. Low standards for acceptance of research articles in journals.	Yes	47	(32)	42	(24)	5
4. Lack of recognition and rewards for research accomplishment.	Yes	34	(32)	46	(24)	-12
5. Types of services and studies desired by school systems.	Yes	62	(32)	42	(24)	20
6. Lack of interest in research on the part of administrators of schools of education.	Yes	56	(32)	71	(24)	-15
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	75	(32)	62	(24)	13
8. Level of major concern on hindrances... by the director.	High (45-100%)	47	(32)	54	(24)	-7
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	60	(25)	50	(20)	10
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	45	(20)	28	(14)	17

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.11.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, level of admission to the graduate program of the institution. (Var. 15, p. D6).*

Level of Agreement on the Attitudinal Item		Proportion of directors according to Level of Admission to the Graduate Program: Closed (20-76%)	Open (77-98%)	Percent difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	50% (22)	38% (16)	12%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	72 (22)	75 (16)	-3
3. Schools...of education generally have low prestige within the universities.	Agree	77 (22)	88 (16)	-11
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	18 (22)	31 (16)	-13
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	82 (22)	94 (16)	-12
2. Intellectual ability of people doing research in education.	Yes	59 (22)	81 (16)	-22
3. Low standards for acceptance of research articles in journals.	Yes	36 (22)	69 (16)	-33
4. Lack of recognition and rewards for research accomplishment.	Yes	36 (22)	56 (16)	-20
5. Types of services and studies desired by school systems.	Yes	50 (22)	44 (16)	-6
6. Lack of interest in research on the part of administrators of schools of education.	Yes	64 (22)	63 (16)	1
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	68 (22)	75 (16)	-7
8. Level of major concern on hindrances... by the director.	High (45-100%)	50 (22)	50 (16)	0
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	80 (20)	40 (10)	40
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	31 (16)	** (5)	

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

**Too few cases for percentaging.

TABLE F.12.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, formal entrance requirements for admission to the graduate program: professional experience. (Var. 39, p. C13).*

		Proportion of directors according to				
		Professional Experience Required				Percent Difference
Level of Agreement on the Attitudinal Item		No		Yes		
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	44%	(34)	46%	(13)	-2%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	71	(34)	85	(13)	-14
3. Schools...of education generally have low prestige within the universities.	Agree	82	(34)	77	(13)	5
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	26	(34)	23	(13)	3
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	85	(34)	77	(13)	8
2. Intellectual ability of people doing research in education.	Yes	65	(34)	77	(13)	-12
3. Low standards for acceptance of research articles in journals.	Yes	62	(34)	23	(13)	39
4. Lack of recognition and rewards for research accomplishment.	Yes	56	(34)	23	(13)	33
5. Types of services and studies desired by school systems.	Yes	53	(34)	46	(13)	7
6. Lack of interest in research on the part of administrators of schools of education.	Yes	74	(34)	38	(13)	36
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	71	(34)	62	(13)	9
8. Level of major concern on hindrances... by the director.	High (45-100%)	59	(34)	31	(13)	28
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	59	(27)	70	(10)	-11
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	35	(20)	71	(7)	-36

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.13.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, proportion of doctoral students working for the Ph.D. in the graduate institution of education. (Var. 17, p. D7).*

Proportion of directors according to

Level of Agreement on the Attitudinal Item		Proportion of Doctoral Students Working for the Ph.D. High (25-100%)	Proportion of Doctoral Students Working for the Ph.D. Low (0-24%)	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	48% (29)	42% (19)	6%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	66 (29)	84 (19)	-18
3. Schools...of education generally have low prestige within the universities.	Agree	60 (29)	84 (19)	-15
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	28 (29)	26 (19)	2
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	86 (28)	79 (19)	7
2. Intellectual ability of people doing research in education.	Yes	61 (28)	74 (19)	-7
3. Low standards for acceptance of research articles in journals.	Yes	50 (28)	47 (19)	3
4. Lack of recognition and rewards for research accomplishment.	Yes	46 (28)	47 (19)	-1
5. Types of services and studies desired by school systems.	Yes	43 (28)	58 (19)	-15
6. Lack of interest in research on the part of administrators of schools of education.	Yes	68 (28)	47 (19)	21
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	71 (28)	68 (19)	3
8. Level of major concern on hindrances... by the director.	High (45-100%)	43 (28)	58 (19)	-15
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	56 (23)	67 (15)	-11
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	27 (15)	58 (12)	-23

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.14.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, an index of interdisciplinarily trained faculty in the graduate institution of education. (Var. 20, p. D8).*

		Proportion of directors according to				
		Index of Interdisciplinarily Trained Faculty				
Level of Agreement on the Attitudinal Item		High(9-85%)		Low (0-8%)		Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	45%	(22)	38%	(21)	7%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	73	(22)	76	(21)	-3
3. Schools...of education generally have low prestige within the universities.	Agree	82	(22)	81	(21)	1
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	27	(22)	24	(21)	3
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	82	(22)	81	(21)	1
2. Intellectual ability of people doing research in education.	Yes	82	(22)	48	(21)	34
3. Low standards for acceptance of research articles in journals.	Yes	64	(22)	33	(21)	31
4. Lack of recognition and rewards for research accomplishment.	Yes	59	(22)	33	(21)	26
5. Types of services and studies desired by school systems.	Yes	59	(22)	38	(21)	21
6. Lack of interest in research on the part of administrators of schools of education.	Yes	73	(22)	52	(21)	21
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	86	(22)	48	(21)	38
8. Level of major concern on hindrances... by the director.	High (45-100%)	59	(22)	48	(21)	11
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	62	(16)	71	(17)	-9
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	54	(13)	36	(11)	18

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.23.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, type of research topics studied in the unit. (Var. 38, p. D13).*

Proportion of directors according to

Level of Agreement on the Attitudinal Item		Type of Research Topics		Percent Difference
		Diversified	Highly Specialized	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	48% (40)	41% (22)	7%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	70 (40)	82 (22)	-12
3. Schools...of education generally have low prestige within the universities.	Agree	75 (40)	59 (22)	16
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	32 (40)	22 (22)	10
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	88 (40)	71 (21)	17
2. Intellectual ability of people doing research in education.	Yes	65 (40)	48 (21)	17
3. Low standards for acceptance of research articles in journals.	Yes	40 (40)	52 (21)	-12
4. Lack of recognition and rewards for research accomplishment.	Yes	42 (40)	43 (21)	-1
5. Types of services and studies desired by school systems.	Yes	52 (40)	48 (21)	4
6. Lack of interest in research on the part of administrators of schools of education.	Yes	70 (40)	38 (21)	32
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	65 (40)	71 (21)	-6
8. Level of major concern on hindrances... by the director.	High (45-100%)	50 (40)	48 (21)	2
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	62 (32)	47 (17)	15
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	32 (22)	43 (14)	-11

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.24.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, existence of a program for training in research provided by the unit. (Var. 42, p. D14).*

		Proportion of directors according to		
		Existence of Training Program in the Unit		
Level of Agreement on the Attitudinal Item		Systematic Apprenticeship Program	No ("get-around" + "hire-leave" policies	Percent difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	44% (18)	52% (33)	-8%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	61 (18)	79 (33)	-18
3. Schools...of education generally have low prestige within the universities.	Agree	55 (18)	76 (33)	-21
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	34 (18)	21 (33)	13
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	94 (18)	78 (32)	16
2. Intellectual ability of people doing research in education.	Yes	67 (18)	62 (32)	5
3. Low standards for acceptance of research articles in journals.	Yes	44 (18)	41 (32)	3
4. Lack of recognition and rewards for research accomplishment.	Yes	44 (18)	47 (32)	-3
5. Types of services and studies desired by school systems.	Yes	50 (18)	62 (32)	-12
6. Lack of interest in research on the part of administrators of schools of education.	Yes	72 (18)	56 (32)	16
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	78 (18)	65 (32)	13
8. Level of major concern on hindrances... by the director.	High (45-100%)	39 (18)	50 (32)	-11
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	50 (18)	63 (30)	-13
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	28 (14)	41 (22)	-13

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.25.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, an index of research-orientation when the director defined the term, educational research. (Footnote 2).*

Proportion of directors according to

Level of Agreement on the Attitudinal Item		Index of Research Orientation High (> 50%)		Index of Research Orientation Low (20-50%)		Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	53%	(30)	39%	(33)	14%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	77	(30)	73	(33)	4
3. Schools...of education generally have low prestige within the universities.	Agree	67	(30)	73	(33)	-6
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	23	(30)	27	(33)	-4
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	83	(30)	81	(32)	2
2. Intellectual ability of people doing research in education.	Yes	57	(30)	62	(32)	-5
3. Low standards for acceptance of research articles in journals.	Yes	47	(30)	44	(32)	3
4. Lack of recognition and rewards for research accomplishment.	Yes	47	(30)	38	(32)	9
5. Types of services and studies desired by school systems.	Yes	57	(30)	47	(32)	10
6. Lack of interest in research on the part of administrators of schools of education.	Yes	60	(30)	59	(32)	1
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	73	(30)	63	(32)	10
8. Level of major concern on hindrances... by the director.	High (45-100%)	57	(30)	44	(32)	13
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	48	(25)	64	(25)	-16
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	39	(18)	37	(19)	2

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.26.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, directors provide opportunities for students to participate in research. (Var. 47, p. D15).*

		Proportion of directors according to		
		Provide opportunities to Participate in Research		Percent Difference
Level of Agreement on the Attitudinal Item		Yes	No	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	42% (52)	64% (11)	-22%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	73 (52)	82 (11)	-9
3. Schools...of education generally have low prestige within the universities.	Agree	77 (52)	36 (11)	41
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	25 (52)	27 (11)	-2
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	86 (52)	60 (10)	26
2. Intellectual ability of people doing research in education.	Yes	64 (52)	40 (10)	24
3. Low standards for acceptance of research articles in journals.	Yes	48 (52)	30 (10)	18
4. Lack of recognition and rewards for research accomplishment.	Yes	44 (52)	30 (10)	14
5. Types of services and studies desired by school systems.	Yes	52 (52)	50 (10)	2
6. Lack of interest in research on the part of administrators of schools of education.	Yes	62 (52)	50 (10)	12
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	71 (52)	50 (10)	21
8. Level of major concern on hindrances... by the director.	High (45-100%)	54 (52)	30 (10)	24
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	60 (43)	29 (7)	31
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	44 (32)	** (5)	

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

**Too few cases for percentaging.

TABLE F.27.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, time-period in which research was the primary activity of the director. (Var. 28, p. D16).*

		Proportion of directors according to		
		Time Period in Which Research was Primary Activity		Percent Difference
Level of Agreement on the Attitudinal Item		Long (>24 months)	Short (≤24 months)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	44% (32)	50% (30)	-6%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	78 (32)	70 (30)	8
3. Schools...of education generally have low prestige within the universities.	Agree	72 (32)	70 (30)	2
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	34 (32)	17 (30)	17
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	81 (31)	87 (30)	-6
2. Intellectual ability of people doing research in education.	Yes	61 (31)	60 (30)	1
3. Low standards for acceptance of research articles in journals.	Yes	36 (31)	57 (30)	-21
4. Lack of recognition and rewards for research accomplishment.	Yes	36 (31)	47 (30)	-11
5. Types of services and studies desired by school systems.	Yes	52 (31)	43 (30)	9
6. Lack of interest in research on the part of administrators of schools of education.	Yes	55 (31)	67 (30)	-12
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	68 (31)	70 (30)	-2
8. Level of major concern on hindrances... by the director.	High (45-100%)	48 (31)	53 (30)	-5
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	63 (27)	48 (23)	15
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	42 (19)	33 (18)	9

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.28.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, time-period in which director was employed by a school system. (Footnote 3).*

		Proportion of directors according to		
		Time-Period Employed by a School System		
Level of Agreement on the Attitudinal Item		At no Time	Short (2-15%)	Long (16-46%)
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	47% (15)	52% (21)	44% (23)
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	80 (15)	81 (21)	65 (23)
3. Schools...of education generally have low prestige within the universities.	Agree	87 (15)	71 (21)	56 (23)
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	33 (15)	38 (21)	13 (23)
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	93 (15)	86 (21)	68 (22)
2. Intellectual ability of people doing research in education.	Yes	67 (15)	48 (21)	59 (22)
3. Low standards for acceptance of research articles in journals.	Yes	53 (15)	43 (21)	41 (22)
4. Lack of recognition and rewards for research accomplishment.	Yes	33 (15)	33 (21)	45 (22)
5. Types of services and studies desired by school systems.	Yes	53 (15)	52 (21)	50 (22)
6. Lack of interest in research on the part of administrators of schools of education.	Yes	73 (15)	57 (21)	55 (22)
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	80 (15)	62 (21)	68 (22)
8. Level of major concern on hindrances... by the director.	High (45-100%)	53 (15)	57 (21)	46 (22)
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	69 (13)	62 (16)	35 (17)
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	17 (6)	29 (14)	54 (13)

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

Footnotes to Appendix F

1. Source for the variable, recruitment pattern of the unit's professional staff in the past three years, is Q. 6.11 of the institutional survey of the directors of research organizations:

   Approximately what proportion of the professional staff of your unit in the past three years were recruited from the following sources:

   %
   _____ Behavioral science departments outside of your own university
   _____ Behavioral science departments within your own university
   _____ . . .
   _____ . . .
   _____ . . .

   100%

   The variable is dichotomized according to the median case: high (11-100%) vs. low (0-10%).

2. Source for the variable, an index of research orientation when the director defined educational research, is Q. 1.12 of the institutional survey:

   Since the term "educational research" is used in a variety of ways, it is often difficult to know what a person means by it. To which of the following kinds of activity do you ordinarily apply the term "educational research"?
   (Check as many as you wish)

   Twelve activities were listed. Four were operationally defined as a research orientation:
   (1) evaluating the effectiveness of new curricula and methods;
   (2) investigating factors which affect the teaching-learning processes in the classroom;
   (3) investigating factors which affect school administration; and
   (4) general psychological studies of human learning or development.

   The score for each respondent is determined by the proportion of items checked that represent a research orientation. The variable is dichotomized according to the approximate median case: high (>50%) vs. low (20-50%).

3. Source for the variable, director's employment by a school system, is Q. 9.7 of the institutional questionnaire:

Have you ever been employed by a school system? ____ Yes; ____ No
IF YES: . . . for how long:

divided by Q. 9.27: What is your age? ______

The measure is determined by the proportion of the respondent's age that represents employment in a school system.

TABLE F.15.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, type of preparation receiving the greatest emphasis in the graduate institution of education. (Var. 22, p. D8).*

		Proportion of deans according to				
		Type of Preparation Emphasized				
Level of Agreement on the Attitudinal Item		Research (alone plus others)		Non-Research		Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	45%	(20)	41%	(27)	4%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	75	(20)	78	(27)	-3
3. Schools...of education generally have low prestige within the universities.	Agree	75	(20)	82	(27)	-7
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	30	(20)	18	(27)	12
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	90	(20)	74	(27)	16
2. Intellectual ability of people doing research in education.	Yes	75	(20)	52	(27)	23
3. Low standards for acceptance of research articles in journals.	Yes	55	(20)	41	(27)	14
4. Lack of recognition and rewards for research accomplishment.	Yes	50	(20)	41	(27)	9
5. Types of services and studies desired by school systems.	Yes	70	(20)	37	(27)	33
6. Lack of interest in research on the part of administrators of schools of education.	Yes	70	(20)	48	(27)	22
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	75	(20)	59	(27)	16
8. Level of major concern on hindrances... by the director.	High (45-100%)	40	(20)	59	(27)	-19
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	56	(18)	63	(19)	-7
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	23	(13)	57	(14)	-34

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.16.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, a research index of interdisciplinary relations by the graduate institution of education. (Var. 23, p. D9).*

		Proportion of directors according to Research Index of Interdisciplinary Relations by the Institution				
Level of Agreement on the Attitudinal Item		High (1-4)		Low (0)		Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	50%	(38)	33%	(12)	17%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	79%	(28)	67	(12)	12
3. Schools...of education generally have low prestige within the universities.	Agree	82	(38)	58	(12)	24
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	24	(38)	33	(12)	-9
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	84	(38)	75	(12)	9
2. Intellectual ability of people doing research in education.	Yes	68	(38)	50	(12)	18
3. Low standards for acceptance of research articles in journals.	Yes	47	(38)	50	(12)	-3
4. Lack of recognition and rewards for research accomplishment.	Yes	47	(38)	42	(12)	5
5. Types of services and studies desired by school systems.	Yes	60	(38)	25	(12)	35
6. Lack of interest in research on the part of administrators of schools of education.	Yes	63	(38)	50	(12)	13
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	71	(38)	58	(12)	13
8. Level of major concern on hindrances... by the director.	High (45-100%)	53	(38)	42	(12)	11
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	67	(33)	29	(7)	38
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	36	(25)	**	(5)	

*Numbers in parentheses represent the bases of the percentages.

**Too few cases for percentaging.

TABLE F.17.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, the existence of a program for training in research provided by the graduate institution of education. (Var. 25, p. D9).*

Proportion of directors according to

Level of Agreement on the Attitudinal Item		Existence of a Training Program		
		Yes (special + part of degree program	No	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	47% (36)	27% (11)	20%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	75 (36)	73 (11)	2
3. Schools...of education generally have low prestige within the universities.	Agree	75 (36)	73 (11)	2
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	30 (36)	18 (11)	12
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	83 (36)	73 (11)	10
2. Intellectual ability of people doing research in education.	Yes	64 (36)	55 (11)	9
3. Low standards for acceptance of research articles in journals.	Yes	39 (36)	55 (11)	-16
4. Lack of recognition and rewards for research accomplishment.	Yes	36 (36)	64 (11)	-28
5. Types of services and studies desired by school systems.	Yes	56 (36)	46 (11)	10
6. Lack of interest in research on the part of administrators of schools of education.	Yes	61 (36)	55 (11)	6
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	64 (36)	64 (11)	0
8. Level of major concern on hindrances... by the director.	High (45-100%)	50 (36)	54 (11)	-4
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	64 (31)	50 (8)	14
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	33 (24)	43 (7)	-10

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.18.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, proportion of graduate faculty doing research in the graduate institution of education. (Var. 26, p. D10).*

Proportion of directors according to

Level of Agreement on the Attitudinal Item		Proportion of Graduate Faculty Doing Research High (37-100%)		Low (0-36%)		Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	37%	(19)	43%	(7)	-6%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	79	(19)	57	(7)	22
3. Schools...of education generally have low prestige within the universities.	Agree	79	(19)	86	(7)	-7
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	32	(19)	29	(7)	-7
Hindrances to the Advancement of Educational Research						
1. Quality of research training provided in graduate schools...of education.	Yes	84	(19)	86	(7)	-2
2. Intellectual ability of people doing research in education.	Yes	68	(19)	86	(7)	-18
3. Low standards for acceptance of research articles in journals.	Yes	47	(19)	29	(7)	18
4. Lack of recognition and rewards for research accomplishment.	Yes	47	(19)	29	(7)	18
5. Types of services and studies desired by school systems.	Yes	58	(19)	14	(7)	44
6. Lack of interest in research on the part of administrators of schools of education.	Yes	63	(19)	57	(7)	6
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	74	(19)	71	(7)	3
8. Level of major concern on hindrances... by the director.	High (45-100%)	58	(19)	57	(7)	1
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	71	(14)	67	(6)	4
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	54	(11)	**	(4)	

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

**Too few cases for percentaging.

TABLE F.19.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, primary responsibility of the graduate faculty in education is research (based on the dean's estimate of the judgment of three groups in the school...of education). (Var. 27, p. D10).*

Proportion of directors according to

Level of Agreement on the Attitudinal Item		Primary Responsibility: Research		Percent Difference
		High (1-3)	Low (0)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	48% (23)	42% (26)	6%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	78 (23)	73 (26)	5
3. Schools...of education generally have low prestige within the universities.	Agree	83 (23)	73 (26)	10
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	25 (23)	23 (26)	2
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	91 (23)	73 (26)	18
2. Intellectual ability of people doing research in education.	Yes	74 (23)	54 (26)	20
3. Low standards for acceptance of research articles in journals.	Yes	52 (23)	46 (26)	6
4. Lack of recognition and rewards for research accomplishment.	Yes	39 (23)	54 (26)	-15
5. Types of services and studies desired by school systems.	Yes	61 (23)	46 (26)	15
6. Lack of interest in research on the part of administrators of schools of education.	Yes	65 (23)	54 (26)	11
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	74 (23)	62 (26)	12
8. Level of major concern on hindrances... by the director.	High (45-100%)	48 (23)	54 (26)	-6
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	65 (20)	53 (19)	12
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	36 (14)	47 (15)	-11

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.20.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, an index of research quality of the graduate institution of education. (Var. 28, p. D11).*

		Proportion of directors according to Index of Research Quality		
Level of Agreement on the Attitudinal Item		Mentioned	Not Mentioned	Percent Difference
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	54% (35)	36% (28)	18%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	77 (35)	72 (28)	5
3. Schools...of education generally have low prestige within the universities.	Agree	71 (35)	68 (28)	3
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	37 (35)	11 (28)	26
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	88 (34)	75 (28)	13
2. Intellectual ability of people doing research in education.	Yes	65 (34)	54 (28)	11
3. Low standards for acceptance of research articles in journals.	Yes	53 (34)	36 (28)	17
4. Lack of recognition and rewards for research accomplishment.	Yes	41 (34)	43 (28)	-2
5. Types of services and studies desired by school systems.	Yes	65 (34)	36 (28)	29
6. Lack of interest in research on the part of administrators of schools of education.	Yes	68 (34)	50 (28)	18
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	79 (34)	54 (28)	25
8. Level of major concern on hindrances... by the director.	High (45-100%)	47 (34)	54 (28)	-7
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	58 (31)	53 (19)	5
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	27 (22)	53 (15)	-26

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.21.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, implied control on the research organization. (Var. 29, p. D11).*

Level of Agreement on the Attitudinal Item		Proportion of directors according to Implied Control on the Unit: Affiliation		Percent Difference
		No	Yes	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	60% (25)	37% (38)	23%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	88 (25)	66 (38)	22
3. Schools...of education generally have low prestige within the universities.	Agree	72 (25)	68 (38)	4
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	28 (25)	24 (38)	4
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	82 (24)	76 (38)	6
2. Intellectual ability of people doing research in education.	Yes	79 (24)	47 (38)	32
3. Low standards for acceptance of research articles in journals.	Yes	42 (24)	47 (38)	-5
4. Lack of recognition and rewards for research accomplishment.	Yes	38 (24)	45 (38)	-7
5. Types of services and studies desired by school systems.	Yes	62 (24)	45 (38)	17
6. Lack of interest in research on the part of administrators of schools of education.	Yes	54 (24)	63 (38)	-9
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	71 (24)	66 (38)	5
8. Level of major concern on hindrances... by the director.	High (45-100%)	54 (24)	47 (38)	7
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	59 (22)	54 (28)	5
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	29 (14)	43 (23)	-14

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

TABLE F.22.--Comparison of responses on fourteen attitudinal items held by directors of research organizations according to the characteristic, level of facilitating the research of non-staff members of the unit. (Var. 32, p. D12).*

		Proportion of directors according to		
		Facilitating Research		Percent Difference
Level of Agreement on the Attitudinal Item		Yes (1+ %)	No (0%)	
1. The Ph.D. should be a research degree and the Ed.D. should be a professional degree.	Agree	53% (34)	38% (24)	15%
2. The Ph.D. generally has higher prestige than the Ed.D.	Agree	71 (34)	83 (24)	-12
3. Schools...of education generally have low prestige within the universities.	Agree	71 (34)	71 (24)	0
4. Persons who wish to make a career of educational research should receive most of their research training from professors in the behavioral sciences outside schools of education.	Agree	29 (34)	17 (24)	12
Hindrances to the Advancement of Educational Research				
1. Quality of research training provided in graduate schools...of education.	Yes	82 (34)	87 (23)	-5
2. Intellectual ability of people doing research in education.	Yes	62 (34)	56 (23)	6
3. Low standards for acceptance of research articles in journals.	Yes	50 (34)	35 (23)	15
4. Lack of recognition and rewards for research accomplishment.	Yes	35 (34)	48 (23)	-13
5. Types of services and studies desired by school systems.	Yes	56 (34)	48 (23)	8
6. Lack of interest in research on the part of administrators of schools of education.	Yes	76 (34)	35 (23)	41
7. Lack of interest in educational research on the part of behavioral scientists outside schools of education.	Yes	79 (34)	52 (23)	27
8. Level of major concern on hindrances... by the director.	High (45-100%)	50 (34)	52 (23)	-2
Difficulty has been experienced in getting qualified students to work on projects in the unit.	Yes	54 (26)	59 (22)	-5
Problems have arisen in coordinating the training program of the unit with the program provided...in the school...of education.	Yes	48 (21)	29 (14)	19

*Numbers in parentheses represent the bases of the percentages. Base numbers vary because those respondents who failed to answer were omitted.

APPENDIX G

Additional Tables for Petterns for Potential Commitment to Research by the 1964 Doctoral Recipients In Education.

The purpose of this appendix is to present additional tables on patterns for potential commitment to research that have not been presented and discussed in chapter six. Again, the major source for the items is the questionnaire survey of the 1964 doctoral recipients in education by Buswell, McConnell, et al. For items concerning certain characteristics of the graduate institutions of education, the source is the 1964 institutional survey of deans and research coordinators of graduate institutions of education by Lazarsfeld and Sieber.

The four items that operationally define patterns for potential commitment to research by the 1964 doctoral recipients in education are: (1) participation in research projects during the first year following the receipt of the doctorate in education; (2) proportion of professional time devoted to research; (3) publication of a research study closely related to the topic of the dissertation; and (4) preference for work in doing research now.

For Appendix G, each pattern has been analyzed, according to each variable operationally defining each of the following three major series of characteristics: (1) the academic patterns of the 1964 doctoral recipients in education; (2) the patterns for economic resources during graduate work; and (3) certain values and processes of decision making for activity in research prior to the receipt of the doctorate in education. According to the type of degree earned and each variable represented in the major series of characteristics, each of the four patterns is also examined. In the appendix are tables covering 20 characteristics of the respondents. They include, among others, the type of formal entrance requirements for admission to the graduate institution of education from which the doctoral degree was received; the number of undergraduate courses taken in the department of education; the numbers of graduate courses taken outside the department of education; the number of years in which the respondent had a full-time job between the first enrollment as a graduate student and the receipt of the doctorate; work in a research organization during the graduate program; and the time period when respondents first decided to study for the doctoral degree.

The test statistic used for analyses of data is the Chi-Square Test. Tables included in the appendix represent data in which results are significant at the .05 level (or below). (Some tables in which the Chi-Square Test has not been performed because of too few cases in at least one category are still included in order to note trends of results, according to certain characteristics.) In some cases, significant results for each of the four patterns occur. However, in most cases only one example is given of a pattern on which significance is yielded, according to each variable. Thus, absence of some tables for some patterns for potential commitment to research cannot be interpreted as the lack of significance. At the conclusion of Appendix G is a table summarizing the results for the four patterns, according to the 20 variables presented in the appendix as well as the 17 variables discussed in chapter six.

The 31 tables that are in the appendix represent examples on which significance occurs for the patterns, according to the three major series of characteristics: tables G.1-G.19 cover the academic patterns of the 1964 doctoral recipients in education; tables G.20-G.23 include the patterns for economic resources during graduate work; and tables G.24-G.31 refer to certain values and processes of decision making for activity in research prior to the receipt of the doctorate.

Patterns for Potential Commitment to Research According to the Academic Patterns of the 1964 Doctoral Recipients in Education.

(Tables G.1-G.19)

TABLE G.1.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate, according to the type of degree earned and the type of formal entrance requirements for admission to the graduate institution of education from which the doctorate was received.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Formal Entrance Requirements*	Ph.D.	(N)	Ed.D.	(N)
1.	65%	(34)	41%	(265)
2.	34%	(56)	41%	(36)
3.	65%	(17)	37%	(92)
4.	47%	(303)	40%	(371)

*Code: Formal Entrance Requirements:

1. Both teaching certificate and professional experience.
2. Teaching certificate, NOT professional experience.
3. NOT teaching certificate, but professional experience.
4. Neither teaching certificate nor professional experience.

TABLE G.2.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the existence of a research organization in the graduate institution of education from which the doctorate was received.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Existence of a Research Organization	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	50%	12%	(422)	60%	5%	(811)
No	57%	8%	(140)	59%	6%	(319)

TABLE G.3.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of their doctoral dissertation, according to the type of degree earned and the existence of a research organization in the graduate institution of education from which the doctorate was received.

	Proportion Who Published a Research Study			
	Type of Doctorate Earned			
Existence of a Research Organization	Ph.D.	(N)	Ed.D.	(N)
Yes	22%	(427)	15%	(831)
No	23%	(146)	15%	(320)

TABLE G.4.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate, according to the type of degree earned and a scale of university reputation.

Keniston's Scale of University Reputation	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
	Ph.D.	(N)	Ed.D.	(N)
Top 12...	53%	(121)	41%	(190)
Next 10...	45%	(150)	43%	(184)
Other AGS...,plus	50%	(109)	38%	(148)
Other...	56%	(146)	35%	(499)
Not included in scale	35%	(51)	40%	(129)

TABLE G.5.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research, according to a scale of university reputation.

Proportion of Time Spent in Research	Keniston's Scale of University Reputation				
	Top 12...	Next 10...	Other AGS ..., plus	Other...	Not included in scale
Low (0%)	47%	55%	53%	62%	62%
Medium (1-49%)	39	36	43	33	33
High (50-100%)	14	9	5	5	5
	100%	100%	101%	100%	100%
	(306)	(325)	(251)	(632)	(179)

TABLE G.6.--Proportion of 1964 doctoral recipients in education, according to a scale of university reputation and preference of work in doing research.

	Keniston's Scale of University Reputation				
Preference of Work	Top 12...	Next 10	Other AGS ..., plus	Other...	Not included in scale
With one or more assistants	11%	13%	12%	10%	13%
As a member of a team	16	11	15	14	18
As a leader of a team	11	8	9	6	6
Individually	19	24	16	23	23
Jointly with an associate	25	20	26	26	21
No preference	18	25	23	21	19
	100%	101%	99%	100%	100%
	(300)	(329)	(250)	(636)	(181)

TABLE G.7.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate, according to the type of degree earned and the sub-field of education in which the doctorate was received.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Sub-field in Education*	Ph.D.	(N)	Ed.D.	(N)
1.	39%	(105)	29%	(358)
2.	64%	(102)	58%	(89)
3.	53%	(39)	37%	(131)
4.	51%	(79)	48%	(110)
5.	52%	(25)	29%	(28)
6.	48%	(188)	36%	(328)

*Code: Sub-field in Education

1. Educational Administration
2. Educational Psychology + Educational Methods
3. Curriculum
4. Counseling
5. Related Academic Fields: History of Education + Philosophy of Education + Educational Sociology
6. Other: includes Physical Education and Clinical Psychology, as well as Secondary and Higher Education

TABLE G.8.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the number of undergraduate courses taken in the department of education.*

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Number of Courses	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
None	51%	15%	(118)	55%	10%	(136)
1-3	54%	14%	(74)	58%	7%	(134)
4-6	53%	10%	(165)	57%	5%	(327)
7-9	48%	10%	(96)	61%	2%	(221)
10+	50%	6%	(107)	59%	6%	(275)

*Chi-Square Test is not performed because of too few cases in one category.

TABLE G.9.--Proportion of 1964 doctoral recipients in education who spend varying proportions of professional time in research, according to the number of courses taken in research methodology.

	Number of Courses				
Proportion of Time Spent in Research	None	1	2	3	4+
Low (0%)	64%	56%	60%	44%	44%
Medium (1-49%)	30	38	34	48	32
High (50-100%)	6	6	6	8	24
	100%	100%	100%	100%	100%
	(211)	(691)	(570)	(142)	(71)

TABLE G.10.--Proportion of 1964 doctoral recipients in education, according to the number of courses taken in statistical methods and preference for work in doing research.

Preference for Work	Number of Courses None	1	2	3	4+
With one or more assistants	7%	12%	11%	11%	13%
As a member of a team	10	15	16	16	9
As a leader of a team	6	7	7	7	13
Individually	37	23	20	20	16
Jointly with an associate	18	19	27	25	25
No preference	23	23	20	21	24
	101%	99%	101%	100%	100%
	(105)	(377)	(625)	(345)	(239)

TABLE G.11.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the degree, according to the type of degree earned and the number of courses taken outside the department of education.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Number of Courses	Ph.D.	(N)	Ed.D.	(N)
None	39%	(43)	35%	(118)
1-9	40%	(247)	37%	(568)
10+	52%	(281)	41%	(454)

TABLE G.12.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research, according to the number of courses taken outside the department of education.

	Number of Courses		
Proportion of Time Spent in Research	None	1-9	10+
Low (0%)	64%	59%	53%
Medium (1-49%)	31	34	40
High (50-100%)	6	8	7
	101%	101%	100%
	(160)	(792)	(727)

TABLE G.13.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the level of agreement by respondents on a reason why they enrolled for courses outside the department of education: courses more "meaty" than that of education courses.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Level of Agreement	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	48%	18%	(111)	53%	12%	(128)
No	51%	9%	(395)	60%	5%	(867)

TABLE G.14.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the level of agreement by respondent on the item: in graduate courses outside the department of education, professors were less interested in respondent's work than if he had been a regular student in the department.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Level of Agreement	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	44%	14%	(133)	58%	4%	(269)
No	53%	10%	(371)	59%	6%	(716)

TABLE G.15.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate, according to the type of degree earned and the level of agreement by respondents on the item, courses outside the department of education were not of any particular value as training for research.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Level of Agreement	Ph.D.	(N)	Ed.D.	(N)
Yes	43%	(129)	30%	(423)
No	53%	(380)	46%	(560)

TABLE G.16.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the level of agreement by respondents on the item, courses outside the department of education were not of any particular value as training for research.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Level of Agreement	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	51%	6%	(126)	65%	4%	(415)
No	50%	13%	(371)	54%	7%	(554)

TABLE G.17.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation, according to the type of degree earned and the value research technique courses contributed to preparation for doing research.

	Proportion Who Did Publish a Research Study			
	Type of Doctorate Earned			
Value Received	Ph.D.	(N)	Ed.D.	(N)
Great	23%	(237)	14%	(509)
Some	19%	(210)	16%	(441)
Little	33%	(54)	22%	(92)
No basis for answer	22%	(59)	14%	(84)

TABLE G.18.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and level of agreement by respondents to the item, courses outside the department of education taught new techniques of research not encountered in courses inside the department.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Level of Agreement	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	47%	15%	(236)	46%	10%	(277)
No	54%	8%	(261)	64%	4%	(692)

TABLE G.19.--Proportion of 1964 doctoral recipients in education who spend varying proportions of their professional time in research, according to the number of semesters in which respondents were full-time students during their graduate work.

	Number of Semesters				
Proportion of Time Spent in Research	None	1-2	3-4	5-6	7-9+
Low (0%)	68%	65%	54%	52%	47%
Medium (1-49%)	27	32	39	38	40
High (50-100%)	3	3	7	9	13
	100%	100%	100%	99%	100%
	(210)	(347)	(433)	(357)	(308)

Patterns for Potential Commitment to Research According to the Patterns for Economic Resources During Graduate Work.
(Tables G.20-G.23)

TABLE G.20.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate, according to the type of degree earned and the number of years respondent had a full-time job between first enrollment as a graduate student and the award of the doctorate.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Number of Years	Ph.D.	(N)	Ed.D.	(N)
None	67%	(69)	42%	(76)
1-2	58%	(84)	44%	(108)
3-4	57%	(104)	47%	(163)
5+	41%	(314)	35%	(792)

TABLE G.21.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the number of years respondent had a full-time job between first enrollment as a graduate student and the award of the doctorate.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Number of Years	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
None	31%	24%	(68)	52%	12%	(77)
1-2	39%	14%	(85)	56%	6%	(107)
3-4	50%	10%	(103)	50%	9%	(161)
5+	60%	8%	(301)	62%	4%	(775)

TABLE G.22.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate, according to the type of degree earned and the respondent's being in debt for his education at the time of his receiving the doctorate.

Proportion Who Did Engage in Research Projects

	Type of Doctorate Earned			
In Debt	Ph.D.	(N)	Ed.D.	(N)
Yes	59%	(205)	38%	(375)
No	45%	(371)	33%	(771)

TABLE G.23.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the respondent's being in debt for his education at the time of his receiving the doctorate.

Proportion of Time Spent in Research

	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
In Debt	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	45%	10%	(201)	59%	4%	(372)
No	55%	12%	(361)	59%	6%	(754)

Patterns for Potential Commitment to Research According to Certain Values and Processes of Decision Making for Activity in Research Prior to the Receipt of the Doctorate in Education.

(Tables G.24-G.31)

TABLE G.24.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and work in a research organization during graduate work.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Worked in a Research Organization	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	33%	27%	(94)	40%	16%	(134)
No	55%	8%	(462)	62%	4%	(986)

TABLE G.25.--Proportion of 1964 doctoral recipients in education according to work in a research organization during graduate work and the preference for work in doing research.

	Worked in a Research Organization	
Preference for Work	Yes	No
With one or more assistants	12%	11%
As a member of a team	13	14
As a leader of a team	15	7
Independently	14	23
Jointly with an associate	24	24
No preference	22	22
	100%	101%
	(224)	(1458)

TABLE G.26.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the level of agreement on the item, experience of working in the research bureau was the most valuable part of research training.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Level of Agreement	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	20%	30%	(40)	31%	19%	(62)
No	43%	24%	(54)	46%	13%	(71)

TABLE G.27.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the degree, according to the type of degree earned and publication of any research reports prior to the receipt of the doctorate.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Prior Publication	Ph.D.	(N)	Ed.D.	(N)
Yes	66%	(166)	58%	(240)
No	43%	(407)	33%	(898)

TABLE G.28.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and publication of any research reports prior to the receipt of the doctorate.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Prior Publication	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Yes	40%	18%	(162)	35%	12%	(239)
No	56%	8%	(397)	66%	4%	(880)

TABLE G.29.--Proportion of 1964 doctoral recipients in education who published a research study closely related to the topic of the dissertation, according to the type of degree earned and publication of any research reports prior to the receipt of the doctorate.

	Proportion Who Did Publish a Research Study			
	Type of Doctorate Earned			
Prior Publication	Ph.D.	(N)	Ed.D.	(N)
Yes	39%	(166)	39%	(240)
No	15%	(404)	9%	(900)

TABLE G.30.--Proportion of 1964 doctoral recipients in education who engaged in research projects during the first year following the receipt of the doctorate, according to the type of degree earned and the time-period when respondents first decided to study for the doctorate.

	Proportion Who Did Engage in Research Projects			
	Type of Doctorate Earned			
Time-Period	Ph.D.	(N)	Ed.D.	(N)
Before College Graduation*	62%	(122)	45%	(188)
After College Graduation	47%	(451)	36%	(955)

*Includes three time-periods; namely, while in high school, between high school and college, and while in college.

TABLE G.31.--Proportion of 1964 doctoral recipients in education who spend 0 and 50-100 percent of their professional time in research, according to the type of degree earned and the time-period when respondents first decided to study for the doctorate.

	Proportion of Time Spent in Research					
	Type of Doctorate Earned					
	Ph.D.			Ed.D.		
Time-Period	(1) 0%	(2) 50-100%	(N)	(1) 0%	(2) 50-100%	(N)
Before College Graduation*	37%	19%	(118)	54%	9%	(186)
After College Graduation	54%	9%	(441)	60%	5%	(939)

*Includes three time-periods; namely, while in high school, between high school and college, and while in college.

Summary

For at least one of the four patterns for potential commitment to research, based on the test statistic, Chi-Square Test, significant results occur at the .05 level (and below), according to certain characteristics of the 1964 doctoral recipients in education. The characteristics include four major series of variables; namely, personal characteristics; the academic patterns; the patterns for economic resources during graduate work; and certain values and processes of decision making for activity in research prior to the receipt of the doctorate in education. Below is a table summarizing the results of the test statistic for 20 variables entertained in Appendix G and for the 17 variables presented in chapter six. If significance occurs, a "yes" is noted under the appropriate heading. If no significant results occur, a "no" is given. If too few cases exist in at least one category of the variables under consideration, the Chi-Square Test is not performed; a dash (-) is noted for such a condition.

Characteristics of the 1964 Doctoral Recipient in Education	Patterns for Potential Commitment to Research			
	(1) Participation in research projects during the first year...	(2) Proportion of professional time devoted to research	(3) Publication of a research study...	(4) Preference for work in doing research
I. Personal Characteristics:				
1. Age	Yes	Yes	Yes	Yes
x Degree earned	Yes	Yes	Yes	No
II. Academic Patterns:				
A. Characteristics of the graduate institution from which the doctorate was awarded				
2. Legal control	No	No	No	No
x Degree earned	Yes	Yes	Yes	No
3. Formal entrance requirements to graduate program	No	-	No	No
x Degree earned	Yes	-	-	-
4. Professional experience required	No	No	No	No
x Degree earned	Yes	Yes	No	-

Characteristics of the 1964 Doctoral Recipient in Education	(1)	(2)	(3)	(4)
5. Level of admission to graduate program	No	Yes	No	No
x Degree earned	No	Yes	No	No
6. Graduate preparation emphasized	Yes	Yes	Yes	No
x Degree earned	Yes	Yes	No	No
7. Existence of a training program	No	Yes	No	No
x Degree earned	Yes	Yes	Yes	No
8. Proportion of graduate faculty doing research	No	Yes	No	No
x Degree earned	No	-	No	-
9. Existence of a research organization	Yes	No	No	No
x Degree earned	Yes	Yes	Yes	No
10. Keniston's scale of university reputation	No	Yes	No	Yes
x Degree earned	Yes	-	Yes	-

Characteristics of the 1964 Doctoral Recipient in Education	(1)	(2)	(3)	(4)
B. Major Subject-Areas and Courses.				
11. Major subject of undergraduate degree	No	Yes	No	Yes
x Degree earned	Yes	-	Yes	-
12. Sub-field of education for the doctorate	Yes	-	No	-
x Degree earned	Yes	-	No	-
13. Undergraduate courses in department of education	Yes	No	Yes	No
x Degree earned	Yes	-	Yes	-
14. Courses in research methodology	Yes	Yes	Yes	-
x Degree earned	Yes	-	Yes	-
15. Courses in statistical methods	Yes	-	Yes	Yes
x Degree earned	Yes	-	Yes	-
16. Courses in college mathematics	Yes	Yes	No	No
x Degree earned	Yes	Yes	Yes	-
17. Courses outside department of education	No	Yes	Yes	No
x Degree earned	Yes	-	Yes	-

Characteristics of the 1964 Doctoral Recipient in Education	(1)	(2)	(3)	(4)
C. Evaluation of Academic Program and Experiences				
18. Mainly learned research methods...	Yes	Yes	Yes	No
x Degree earned	Yes	Yes	Yes	No
19. Took courses outside...education: content more "meaty"	No	Yes	Yes	No
x Degree earned	Yes	Yes	Yes	No
20. Courses outside...education taught new research techniques	Yes	Yes	Yes	Yes
x Degree earned	Yes	Yes	Yes	No
21. Courses outside...education not of any particular value as training for research	Yes	Yes	Yes	Yes
x Degree earned	Yes	Yes	Yes	Yes
22. In courses outside...education, less interest shown by professors	No	No	No	Yes
x Degree earned	Yes	Yes	Yes	Yes
23. Research technique courses: value as preparation of doing research	No	Yes	No	No
x Degree earned	Yes	Yes	Yes	-

Characteristics of the 1964 Doctoral Recipient in Education	(1)	(2)	(3)	(4)
D. Time Patterns				
24. Number of semesters: full-time	Yes	Yes	Yes	Yes
x Degree earned	Yes	-	Yes	-
25. Continuous residence	Yes	Yes	Yes	Yes
x Degree earned	Yes	-	Yes	Yes
III. Patterns for Economic Resources:				
26. Teaching or school experience prior to...doctorate	Yes	Yes	Yes	Yes
x Degree earned	Yes	-	Yes	-
27. Full-time job between first enroll enrollment as graduate student and receipt of doctorate	Yes	Yes	Yes	Yes
x Degree earned	Yes	Yes	Yes	-
38. Receipt of research scholarship or assistantship	Yes	Yes	Yes	Yes
x Degree earned	Yes	Yes	Yes	Yes
29. In debt at time of receipt of doctorate	Yes	Yes	No	Yes
x Degree earned	Yes	Yes	Yes	No

Characteristics of the 1964 Doctoral Recipient in Education	(1)	(2)	(3)	(4)
IV. Certain Values and Processes of Decision Making for Activity in Research:				
30. Decision to study for the doctorate	Yes	Yes	Yes	Yes
x Degree earned	Yes	Yes	Yes	Yes
31. Original objective upon entering graduate school	Yes	Yes	Yes	No
x Degree earned	Yes	Yes	Yes	No
32. Reason for choosing graduate institution: research opportunities	Yes	Yes	Yes	No
x Degree earned	Yes	Yes	Yes	No
33. Publication of research reports prior to...doctorate	Yes	Yes	Yes	Yes
x Degree earned	Yes	Yes	Yes	Yes
34. Participation in research projects outside...education	Yes	Yes	Yes	No
x Degree earned	Yes	Yes	Yes	No
35. Range of research experiences	Yes	Yes	Yes	Yes
x Degree earned	Yes	-	Yes	-

Characteristics of the 1964 Doctoral Recipient in Education	(1)	(2)	(3)	(4)
36. Work in a research organization	Yes	Yes	Yes	Yes
x				
Degree earned	Yes	Yes	Yes	Yes
37. Work in research organization most valuable part of research training	Yes	Yes	No	No
x				
Degree earned	No	Yes	No	-